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ABSTRACT

The purposes of the study were to (1) identify formulas currently used for justifying budget requests or allocating funds for operating expenses of state-supported colleges and universities; (2) provide a comparative analysis of each formula with respect to the functional budget areas recognized, the base and formula factors used, methods of computation, and the extent of differentiation among academic areas, levels of instruction, and institutions; and (3) determine which formula or formulas met general standards of acceptability through an assessment using performance criteria. Ranking officers of higher education coordinating or governing agencies in 46 states and directors of institutional research or finance in four others furnished copies of their current operating budget formulas. Criteria for assessing formula acceptability were derived from previous studies and extrapolated from the literature. Among the conclusions were that: (1) formula funding had increased considerably since its inception in 1951; (2) budget formulas tended to be used by states spending relatively less on higher education or with limited resources; (3) two funding philosophies were reflected in the formulas used statewide: a program equalization policy, and a policy to avoid jeopardizing existing high-quality programs; and (4) for reasons of diversity, no single formula or combination of formulas could be designated as a model for national use. Recommendations are made in the form of guidelines for developing and applying budget formulas. (Author/MSE)

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"A COMPARATIVE ANALYSIS OF THE EXISTING BUDGET FORMULAS USED FOR JUSTIFYING BUDGET REQUESTS OR ALLOCATING FUNDS FOR THE OPERATING EXPENSES OF STATE-SUPPORTED COLLEGES AND UNIVERSITIES"

A Dissertation Summary

by

Francis M. Gross

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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ABSTRACT

The purposes of the study were to: (1) identify formulas currently used for justifying budget requests or allocating funds for operating expenses of state-supported colleges and universities; (2) provide a comparative analysis of each formula in respect to the functional budget areas (instruction and departmental research, organized activities related to instruction, libraries, general administration and general expense, organized research, extension and public service, and physical plant operation and maintenance) recognized, the base (variable) and formula (fixed) factors used, the methods of computation, and the extent of differentiation among academic areas, levels of instruction, and institutions; and (3) to determine which formula or formulas met general standards of acceptability through an assesment using performance criteria.

Ranking officers of higher education coordinating or governing agencies which existed in 46 states and the Directors of Institutional Research or Finance at the Universities of Delaware, Maine, Nebraska, and Vermont furnished copies of their current operating budget formulas. Budget practices in each state were accounted for, and copies of every formula in use during 1972-73 or 1973-74 fiscal years were obtained. Criteria for assessing the extent to which each formula met general standards of acceptability were developed from standards and goals suggested by previous studies and extrapolated from the literature. Selection and grouping of criteria were based on the ratings given each criterion by a nationwide review panel consisting of Robert O. Berdahl, M. M. Chambers, Edward J. Coyle, James Furman, Lyman Glenny, Adolph Koenig, John D. Millett, Bevington Reed, and Logan Wilson.

Budget formulas were in use in 25 states. Twenty-one states applied formulas statewide; 23 states practiced zero-base budgeting while two

states practiced incremental budgeting. Twenty-one states used formulas for justifying budget requests; four states used formulas for allocating appropriated funds among institutions. Fourteen states differentiated among academic levels and 23 states differentiated among student or instructional levels in calculating the estimated funding requirements for instructional and departmental research. Ten states differentiated among both factors.

Three basic computational methods were identified under which every formula was classified: (1) rate per base factor unit (RBFU), (2) percentage of base factor (PBF), and (3) the base factor-position ratio with salary rates (BF-PR/SR) method. The RBFU method, used in 37 percent of the calculations, was used primarily in estimating funds for student services. The PBF method, used in 40 percent of the calculations, was used primarily in estimating funds for organized activities related to instruction, libraries, general administration and general expense, and organized research. The RBFU and PBF methods were used equally in calculating the estimated funds for plant operation and maintenance. The BF-PR/SR method, utilized in 23 percent of the calculations, was used primarily in estimating funds for instruction and departmental research.

The budget formulas in 12 states met the minimum standards of acceptability by satisfying the minimum requirements of at least six of the eight performance criteria. They were Arkansas, Colorado, Georgia, Maryland, Nevada, Ohio, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, and West Virginia.

The conclusions were that (1) formula funding had increased considerably since its inception in 1951; (2) budget formulas tend to be accepted and used by states which spend relatively less on higher education or which

have limited resources; (3) budget formulas are used primarily in calculating the estimated funding for those budget areas in which data related to expenditures were most easily quantifiable; (4) zero-base budgeting works best with formula funding; (5) the itemized approach of estimating funding requirements of each budget area, although more detailed, adds greater refinement and accruacy to a formula by permitting a broader base for resource requirements; (6) two funding philosophies were reflected in the states which used budget formulas on a statewide basis: eight states used formulas to support an "equalization policy" of funding higher education in a manner which could have a leveling effect on the quality of educational programs, while 13 states followed a funding policy which differentiated among colleges, regional universities, and comprehensive universities that did not jeopardize the high-quality programs at their capstone institutions; and (7) due to the diversity among institutions, types of institutions, and state systems of higher education, no single formula or combination of formulas could be designated as a model for national use.

The recommendations consisted of guidelines for developing and applying budget formulas and were as follows: (1) the decision to develop and utilize budget formulas should be made only after all alternatives have been fully identified and evaluated (with each state deciding, based on its own situation, whether or not the advantages of formula funding outweigh the disadvantages); (2) the development of a budget formula should be performed by a task force consisting of the financial representatives from the state budget office, the higher education coordinating or governing agency, and from every institution to be affected; (3) budget formulas should be utilized only for calculating funding requirements of

those budget areas for which base factors exist which have a high correlation with historical expenditures; (4) in calculating the budget or allocation for instruction and departmental research, the formula should recognize the varying costs of instruction by differentiating among each level of instruction within each academic area at each instituion; (5) budget formulas should not be used for the "equalization" of instruction (unless mediocrity of educational programs is the desired goal), instead, formula funding should be used to provide a "minimum foundation" tailored for each institution's needs; (6) the state appropriation should not be reduced by unrestricted revenue from any source except student tuition and fees; and (7) there should always be the provision for an institution to override the formula-calculated amount in its operating budget request with an additional request supported by both objective and subjective data. The study concluded with recommendations for additional studies to be performed. The appendices provided detailed supporting data on each formula. The study numbered 405 pages.

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SECTION I

INTRODUCTION

This report represents a summary of a doctoral dissertation[1] submitted to the Graduate School at The University of Tennessee entitled "A Comparative Analysis of the Existing Budget Formulas Used for Justifying or Allocating Funds for the Operating Expenses of State-supported Colleges and Universities." The information presented in this report was taken primarily from the last two chapters (IV and V) of the study. Copies of the complete dissertation are on file in the Office of Institutional Research Library and the Graduate Library at The University of Tennessee, Knoxville.

I. THE PROBLEM

The great increase in the budgetary requirements of higher education during the last two decades has resulted in a corresponding increase in the growth rate of state appropriations for public colleges and universities. As more state resources have been channeled into postsecondary education each year, budget agencies and legislatures in many states have become acutely aware of the need for a systematic and objective approach for exercising greater control over public funds for higher education. On the other hand, college and university administrators are determined to protect academic freedom from the encroachment of budgetary restraint. As a compromise, states have begun to develop and apply budget formulas to

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determine the appropriations for operating expenses of state-supported institutions.

Statement of the problem. The problem of this study is to identify and analyze the existing budget formulas used for justifying budget requests or allocating funds for the operating expenses of state-supported colleges and universities in order to provide additional data in the continuing search for an equitable means of allocating state resources to public higher education.

Importance of the study. The extent to which formulas are currently used by states is not widely publicized. Only four studies were found which were published or whose results were available for general dissimination. A doctoral study by Boling in 1961 compared and analyzed the formulas used in two states.[1] In 1963, Miller completed a dissertation which presented a comparative study of the formulas used by six states.[2] A doctoral study by Walton in 1967 identified and gave an algebraic expression for each formula used by 16 states.[3] Finally, the Stumph dissertation completed in 1969, reviewed the formulas used by ten states.[4]

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[1]Edward J. Boling "Methods of Objectifying the Allocation of Tax Funds to Tennessee State Colleges" (unpublished Doctoral dissertation, George Peabody College for Teachers, 1961).

[2]James L. Miller, Jr., State Budgeting for Higher Education: The Use of Formulas and Cost Analysis (Ann Arbor: Institute of Public Administration, The University of Michigan, 1964).

[3]Joel P. Walton, "An Analysis of the Methods Utilized By State Boards Governing Multiple Institutions of Higher Education in the Distribution of Current Operating Funds Under Their Control: (unpublished Doctoral dissertation, The University of Mississippi, 1967).

[4]Wayne J. Stumph, "A Comparative Study of Statewide Coordinating Agencies for Higher Education in Selected States" (unpublished Doctoral dissertation, Southern Illinois University, 1970).

None of these studies, however, attempted to identify or analyze all the formulas in use at the time each was performed. The states included in each of the four studies cited are presented in Table I on the following page. Even these studies are out of date. An examination of the formulas of eight states which were reported in two or more of the studies identified revealed modifications in at least six of the formulas over the period 1963-70. This trend is in keeping with the following observation by Glenny:

> Experience has shown that formulas must be constantly re-evaluated to keep them timely and equitable and to reflect as accurately as possible the changing assumptions which serve as their basis.[5]

Purposes of the study. The purposes of this study were as follows: (1) to identify the formulas currently used for justifying budget requests or allocating funds for the operating expenses of state-supported colleges and universities; (2) to perform a comparative analysis of each formula in respect to the functional budget areas recognized, the base (variable) and formula (fixed) factors used, the methods of computation, and the extent of differentiation among academic areas, levels of instruction, and institutions; and (3) to determine which formula or formulas met the general standards of acceptability through an assessment using performance criteria.

Limitations of the study. This study was delimited to the fifty states of the United States. It dealt only with formulas used for justifying budget requests or allocating funds for the current operating expenses of four-year state-supported colleges and universities. Medical

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[5]Lyman A. Glenny, "State Systems and Plans for Higher Education," Emerging Patterns in American Higher Education, Logan Wilson, editor (Washington: American Council on Education, 1965). p. 99.

TABLE I

STATES INCLUDED IN PREVIOUS
BUDGET FORMULA STUDIES
(1961-1970)

States	Studies			
	Boling (1961)	Miller (1963)	Walton (1967)	Stumph (1970)
Alabama			X	
Arkansas				X
California		X	X	
Connecticut			X	X
Florida	X	X	X	
Illinois			X	X
Indiana			X	
Kentucky		X	X	X
Louisiana			X	
Michigan				X
Minnesota			X	
Mississippi			X	
Missouri				X
New Mexico			X	
North Dakota			X	
Ohio				X
Oklahoma		X	X	X
Oregon			X	
Tennessee		X	X	
Texas	X	X	X	X
Wisconsin				X
TOTALS	2	6	16	10

schools were excluded.

The data used in developing this study were delimited to the responses received from officials in statewide coordinating or controlling agencies for higher education or in institutions of higher education.

The search for related literature was restricted to books, abstracts, and periodicals on file in the University of Tennessee Library System, the University of Tennessee Office of Institutional Research, and the libraries of the Southern Regional Education Board and the Tennessee Higher Education Commission; microfiche on file in the Educational Resources Information Center (ERIC); and books personally owned or borrowed by the writer.

II. DEFINITIONS OF TERMS

The following major terms are used throughout this study, and are therefore defined in order to insure clarity and continuity for the reader.

Appropriation. A term used to designate an authorization granted by a state legislative body to make expenditures and to incur obligations for specific purposes. The appropriation is usually limited in amount and time when it may be expended.[6]

Base factor. Objective (quantitative) data which describes some aspect (past, present, or future) of a specific institution (e.g., enrollment, square feet of building space, etc.) and is used as input to drive a budget formula.

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[6]Carter V. Good (ed.), Dictionary of Education, Second Edition New York: McGraw-Hill, 1959), p. 35.

Budget formula. A set of statements which detail a procedure for manipulating variable (quantitative) data applicable to an institution of higher education (base factors) by pre-established fixed data (formula factors) to produce the estimated future funding requirements of the institution. A budget formula may consist of several sub-sections or components (i.e., separate formulae for each functional budget area) and may be expressed algebraically.

Budget request. A request for a legislative appropriation of funds that is initiated by an institution and transmitted to the governor through a state budget office (or through a coordinating or governing agency on the institution's behalf. The budget request will have been developed in accordance with the guidelines of the existing budget formula.[7]

Current operating expenses. Expenditures during a single fiscal year for the salaries and wages, materials and supplies, and other operating costs of the functional budget areas.

Formula factors. Pre-established factors specified in a budget formula that are applicable to all institutions or types of institutions (e.g., student-faculty ratios, rates per base factor unit, percentages, etc.).

Functional budget areas. The grouping of activities and their corresponding funding requirements according to the broad functional activities within an institution of higher education. The eight generally recognized functional budget areas consist of (1) instruction and depart-

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[7]Miller, op. cit., p. 7.

mental research, (2) organized activities related to instruction, (3) libraries, (4) general administration and general expense, (5) student services, (6) organized research, (7) extension and public service, and (8) physical plant operation and maintenance.

Guidelines. A set of statements which define parameters for budget requests (e.g., minimum and maximum number of positions, percentage ranges, etc.) but do not constitute a budget formula.

Institution. A college or university considered to have sufficient independence for classification as a separate institution under the board and its central administrative staff.[9]

Objective data. Quantified information such as that concerning programs, costs, or the relationship between programs and costs which is expressed in uniform units of measurement that can be manipulated mathematically. Examples are: (a) in program measurement, the use of semester or quarter credit hours to measure the amount of formal instruction, or square feet of floor space to measure the requirements for building maintenance and custodial service; (c) in the measurement of relationships between programs and cost, the computation of the cost per student credit hour of instruction at a particular level for a particular discipline, or the cost per square foot for custodial service.[10]

III. SOURCES OF DATA AND PROCEDURES

In order to ascertain the extent to which budget formulas were used throughout the United States, the population of the study included

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[9]Walton, op. cit., p. 8.

[10]Miller, op. cit., pp. 4-5.

all 50 states. Letters of inquiry asking for a complete and up-to-date description of the budget formulas currently in use were sent to the ranking officers of the coordinating or governing agencies which existed in 46 states, and to the Directors of Research or Finance at the Universities of Delaware, Maine, Nebraska, and Vermont. Follow-up requests were mailed to those states which had not responded within six weeks. Finally, long distance telephone calls were placed to the officials who had failed to respond to both written requests.

After all 50 states were accounted for and all available data were obtained, a state-by-state description of each formula was prepared. The formulas were compared in respect to: (1) functional budget areas recognized, (2) base (variable) and formula (fixed) factors used, (3) methods of computation, (4) areas of sensitivity, and (5) extent of differentiation among institutions.

The assessment to determine which formulas met the general standards of acceptability was performed using acceptance criteria that were reviewed by a nationwide panel of educators selected for their expertise and interest in financing higher education.

IV. CURRENT UTILIZATION OF FORMULAS

The study was based on data obtained over a ten-month period (January through October, 1973) from all 50 states. States which were found to be using a procedure for funding higher education which was in accordance with the definition given on page 5 for a "budget formula" were considered to be formula-states and were included in the comparative analysis.

The national survey identified 25 states in which budget formulas were in use during the 1972-73 or 1973-74 fiscal years, or the 1973-75

biennium. They are identified in Table II which presents the extent to which budget formulas were in use by states in 1973. The comparative analysis and evaluation of existing budget formulas appear in Section II of this report.

TABLE II

EXTENT TO WHICH BUDGET FORMULAS WERE UTILIZED BY STATES IN 1973

State	Budget Formula Used	Budget Formula Not Used	State	Budget Formula Used	Budget Formula Not Used
Alabama	X		Montana		X
Alaska		X	Nebraska		X
Arizona		X	Nevada	X	
Arkansas	X		New Hampshire		X
California		X	New Jersey	X	
Colorado	X		New Mexico		X
Connecticut		X	New York	X	
Deleware		X	North Carolina		X
Florida	X		North Dakota	X	
Georgia	X		Ohio	X	
Hawaii		X	Oklahoma	X	
Idaho		X	Oregon		X
Illinois		X	Pennsylvania	X	
Indiana		X	Rhode Island		X
Iowa		X	South Carolina	X	
Kansas		X	South Dakota	X	
Kentucky		X	Tennessee	X	
Louisiana	X		Texas	X	
Maine		X	Utah		X
Maryland	X		Vermont		X
Massachusetts		X	Virginia	X	
Michigan		X	Washington	X	
Minnesota	X		West Virginia	X	
Mississippi	X		Wisconsin	X	
Missouri	X		Wyoming		X
			Totals	25	25

SECTION II

COMPARATIVE ANALYSIS AND ASSESSMENT OF BUDGET FORMULAS

This section presents the information obtained from comparing each of the existing 25 budget formulas in respect to (1) functional budget areas recognized, (2) base (variable) and formula (fixed) factors used, (3) methods of computation, and (4) extent of differentiation among academic areas, levels of instruction, and institutions. Included also are the criteria developed for assessing the formulas and the results obtained.

I. COMPARATIVE ANALYSIS

Budget Areas Recognized by Formulas

The standardized accounting practices which served as an early antecedent to the development of budget formulas resulted in the general acceptance by colleges and universities of budget areas which paralleled the major functional activities of education and general expense. As used in this study, those budget areas were grouped and defined as follows:

1. Instruction and departmental research.

   Includes compensation for academic administration, faculty members, supporting staff and clerical employees; instructional and laboratory expenses; travel; office supplies and equipment; faculty enrichment and recruiting; and other expenses for departments, colleges, and schools for instruction and unsponsored research.

2. Organized activities related to instruction.

   Includes all expenditures for activities organized and operated in connection with the instructional departments and conducted primarily to give professional training to students, such as agriculture college creameries and demonstration schools for

teacher education.[1]

3. Libraries.

Includes the expenses for all separately organized libraries, both general and departmental, consisting of expenditures, salaries, wages and other operating expenses such as costs of procuring and maintaining the collections.[2]

4. General administration and general expenses.

Includes all expenditures for the general executive and administrative offices which serve the institution as a whole, as well as other expenditures of a general character not related to any specific division of the institution which is budgeted separately.[3]

5. Student services.

Includes all expenditures for administering undergraduate and graduate admission activities, processing and maintenance of student records and reports, student registration, counseling, and placement.[4]

6. Organized research.

Includes all expenditures for research projects which are organized, budgeted, or financed separately from the instructional departments.[5]

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[1]James L. Miller, Jr., State Budgeting for Higher Education: The Use of Formulas and Cost Analysis (Ann Arbor: Institute of Public Administration, The University of Michigan, 1964), p. 95.

[2]Tennessee Higher Education Commission, "Instructions for Preparing and Submitting Requests for Legislative Appropriations for Operating Expenses: Fiscal Year Ending June 30, 1974" (Nashville: Tennessee Higher Education Commission, 1972), p. 6. (Mimeographed.)

[3]Miller, op. cit., pp. 94-95.

[4]Arkansas Department of Higher Education, Instructions for Preparing and Submitting Requests for Legislative Appropriations (Little Rock: Arkansas Department of Higher Education, 1972), p. 6.

[5]Miller, op. cit., p. 95.

7. Extension and public service.

Includes all expenditures for activities designated primarily to serve the general public, including correspondence courses, adult study courses, public lectures, institutes, workshops, demonstration centers, package libraries, museums, and similar activities.[6]

8. Physical plant operation and maintenance.

Includes all expenditures for salaries, wages, supplies, materials, fuel and utilities, and other expenses in connection with the day-to-day operation of the physical plant and its maintenance.[7]

Treatment of Budget Areas in Formulas

A comparison by formula of the budget areas addressed, which is presented in Table III, revealed a considerable variation among states. Two states (Louisiana and Oklahoma) recognized all eight budget areas; two states (New Jersey and South Carolina) recognized seven budget areas; seven states (Florida, Georgia, Mississippi, North Dakota, Ohio, Pennsylvania, and Texas) recognized six budget areas; five states (Alabama, Arkansas, Maryland, Nevada, and Tennessee) recognized five budget areas; two states (New York and Washington) recognized four budget areas; three states (Minnesota, Virginia, and Wisconsin) recognized three budget areas; two states (Colorado and West Virginia) recognized two budget areas; and two states (Missouri and South Dakota) recognized only one budget area. In 11 states (Arkansas, Colorado, Florida, Maryland, Minnesota, New Jersey, South Dakota, Texas, Virginia, Washington, and West Virginia), only a portion of the total operating expenses in each of several budget areas was actually formula calculated.

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[6]Arkansas Department of Higher Education, op. cit., p. 7

[7]Tennessee Higher Education Commission, op. cit., p. 7.

TABLE III

FORMULA CALCULATION OF FUNCTIONAL BUDGET AREAS
IN TWENTY-FIVE STATES

State	Instruction and Departmental Research	Activities Related to Instruction	Libraries	General Administration and Expense	Student Services	Organized Research	Extension and Public Service	Physical Plant Operation and Maintenance
Alabama	F		F	F	F			F
Arkansas	P[a]		F	P[b]	F			P[c]
Colorado	P[d]		F					
Florida	F		F	F	F		P[e]	F
Georgia	F		F	F	F		F	F
Louisiana	F	F	F	F	F	F	F	F
Maryland	P[g]		F	F	F			F
Minnesota	P[f]		F					P[g]
Mississippi	F		F	F	F	F		F
Missouri*	F							
Nevada	F		F	F	F			F
New Jersey	F	F	F	F	F		P[e]	F
New York**	F		F	F	F			
North Dakota	F	F	F	F	F			F
Ohio	F	F	F	F	F			F
Oklahoma	F	F	F	F	F	F	F	F
Pennsylvania	F	F	F	F	F			F

TABLE III (continued)

States	Instruction and Departmental Research	Activities Related to Instruction	Libraries	General Administration and Expense	Student Services	Organized Research	Extension and Public Service	Physical Plant Operation and Maintenance
South Carolina	F	F	F	F	F		F	F
South Dakota	P[d]							
Tennessee	F		F	F	F			F
Texas	F		F	P[b]	F	F		P[c]
Virginia	P[h]		F					P[i]
Washington	P[j]		F		F			F
West Virginia	P[f]		P[k]					
Wisconsin	F		F		F			
Totals	25	7	23	17	19	4	6	19

Key: F = Fully recognized by formula component.
P = Partially recognized by formula component which included:

[a] Faculty Salaries Only
[b] General Administration Only
[c] Building Maintenance and Custodial Service Only
[d] Faculty, Academic Administration, and Supporting Salaries Only
[e] Public Service Only
[f] Faculty and Supporting Salaries Only
[g] Building Maintenance Positions, Custodial Positions, and Utility and Fuel Cost Only
[h] Faculty and Academic Administrative Salaries Only
[i] Total FTE Positions and Operating Expenses Only
[j] Faculty Salaries, Supporting Salaries, and Operating Expenses Only
[k] Personnel Salaries Only

* The Governor's formula.

** The City University of New York formula.

Several states addressed two or more budget areas in a single formula component. Student services were included in general administration and general expense by Alabama, Florida, Georgia, Lousiana, Maryland, and Oklahoma. Mississippi combined student services and physical plant operation and maintenance with general administration and general expense. New Jersey included student services, libraries, and organized activities related to instruction with general administration and general expense. Student services, organized activities related to instruction, and general administration and general expense were combined by North Dakota and South Carolina. Louisiana also included organized activities related to instruction, organized research, and extension and public service with instructional costs. New Jersey included public service with instructional expenses.

Computational Methods Used in Formulas

Recurring patterns between the application of base and formula factors in every formula component made possible the identification of three basic computational methods under which every calculation could be classified. They were: (1) the rate per base factor unit (RBFU) method where base factors such as credit hours or square feet were multiplied by specified rates per unit; (2) the percentage of base factor (PBF) method where the product was a specified percentage of a base factor such as total instructional salaries, etc.; and (3) the base factor-position ratio with salary rates (BF-PR/SR) method where FTE positions were first determined by applying specified base factor ratios to base factors such as credit hours, FTE enrollments, etc., and then multiplied by specified salary rates.

The Comparative Analysis

Each budget formula was compared on a component-by-component basis as used for calculating the estimated operating funds for each budget area.

1. Instruction and Departmental Research (I&DR).

All 25 budget formula states had formula components for calculating a portion or all of their I&DR budget requests or allocations. Table IV presents a comparison of the methods each state used.

Four states (Arkansas, Misscuri, New Jersey, and Tennessee) took an "all-inclusive" approach whereby the total I&DR budget was determined by one calculation. The remaining 21 states followed an "itemized" approach whereby the total I&DR budget was determined through separate calculations for different line items (e.g., faculty FTE positions and/or salaries, academic administration FTE positions and/or salaries, etc., through departmental expenses). Every state (except Lousisiana and Texas, which used actual credit hours produced during a prior year) used projected enrollments as the base factors for deriving its I&DR formula component.

The rate per base factor unit (RBFU) method was used by 13 states. Seven converted projected or base year enrollments to credit hours (by student or instructional level within academic areas) and applied rates per credit hour specified for each level within each academic area to determine: (1) faculty salaries (Arkansas, Louisiana, and Texas); (2) faculty salaries and departmental expenses (Alabama); (3) total I&DR expenses (Misssouri, Tennessee, and Texas); (4) or total addtiional I&DR expenses to be added to the base year budget (Wisconsin). Table V presents the average rates per credit hour used by six of the states.

TABLE IV

METHODS OF BUDGETING OR ALLOCATING FUNDS FOR INSTRUCTION AND DEPARTMENTAL RESEARCH

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation		
					Academic Areas	Student or Instructional Levels	Institutions
Alabama	Faculty Salaries and Departmental Operating Expenses	Projected Credit Hours	Credit Hour Complexity Indices and Rates per Credit Hour	Total weighted credit hours times a rate per credit hour	Fifteen	Three	
	Academic Administration Salaries	Total Faculty Salaries and Departmental Operating Expenses Budgeted	Percentage	A percentage of the base factor			
Arkansas	Faculty Salaries	Projected Credit Hours	Rates per Credit Hour	Credit hours times rates per credit hour at each level for each academic area	Sixteen	Five	
Colorado	Faculty Salaries	Projected Credit Hours	Credit Hour-Faculty Ratios	Faculty FTE positions times average salary rates	Forty	Nine	Separate salary rates for each institution
	Academic Administration Salaries	FTE Faculty	Faculty-Administrator Ratio	Administrative FTE positions times average salary rates			Separate salary rates for each institution
Florida	Teaching Salaries	Projected Credit Hours	Credit Hour-Faculty Ratios and Salary Rates	Teaching faculty FTE positions times average salary rates for each rank	Twenty-five	Five	
	Research Salaries	FTE Teaching Faculty	Teacher-Researcher Ratios and Salary rates	Research faculty FTE positions times average salary rates		Three	

TABLE IV (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation		
					Academic Areas	Student or Instructional Levels	Institutions
Florida (continued)	Academic Administration Salaries	FTE Faculty	Faculty-Administrator Ratio and Salary rate	Administrative FTE positions times a given salary rate			
	Instructional Supporting Salaries	Academic FTE Positions	Academic-Clerical Ratios	Supporting FTE positions times the average rate at each institution			Separate ratios for comprehensive and regional universities
	Departmental Operating	Academic FTE Positions	Rate per FTE Position	Academic FTE position times a given rate			
Georgia	Teaching Salaries	Projected Credit Hours	Credit Hour-Faculty Ratios and Salary Rate	Teaching FTE positions times a given salary rate		Three	
	Research Salaries	FTE Graduate Faculty	Grad. Faculty-Researcher Ratio and Salary Rate	Research FTE positions times a given salary rate		Graduate Level only	
	Instructional Supporting Salaries	FTE Faculty	Faculty-Clerical Ratio and Salary Rate	Supporting FTE positions times a given salary rate			
	Departmental Expenses	FTE Faculty	Rate per Position	Faculty FTE positions times a given rate			
Louisiana	Faculty Salaries	Base Year Credit Hours	Rates per Credit Hour	Credit hours times rates given for each level in each academic area	Nine	Five	

TABLE IV (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation: Academic Areas	Differentiation: Student or Instructional Levels	Differentiation: Institutions
Louisiana (continued)	Academic Administration and Supporting Salaries and Departmental Expenses*	Total Faculty Salaries Budgeted	Percentages	A percentage of the budget base			A higher percentage used for the comprehensive university
Maryland	Faculty Salaries	Projected Credit Hours	Credit Hour-Faculty Ratios	Faculty FTE positions times given average salary rates (by rank)		Four	Ratios for three ranges of credit hour production, and salary rates for three types of institutions
	Other Instructional Expenses	Total Faculty Salaries Budgeted	Percentages	Should approximate a given percentage of the base factor			
Minnesota	Faculty Salaries	Projected FTE Enrollments	Student-Faculty Ratios and Salary Rates	New faculty FTE positions times a given salary rate	Ratios given for high and low cost areas	Three	
	Instructional Supporting Salaries	Projected FTE Enrollments	Student-Staff Ratios and Salary Rates	Supporting FTE positions times given salary rates			Fixed number of FTE positions per institution plus additional number based on enrollments
Mississippi	Faculty Salaries	Projected FTE Enrollments	Student-Faculty Ratios and Salary Rate	Faculty FTE positions time a given salary rate		Three	

TABLE IV (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation		
					Academic Areas	Student or Instructional Levels	Institutions
Mississippi (continued)	Other Instructional Expenses	Total Faculty Salaries Budgeted	Percentages	A percentage of the base factor			Separate percentages for colleges and universities
Missouri (Governor's formula)	Total Instructional Costs	Projected Credit Hours	Rates per Credit Hour and credit hour complexity indices	Weighted credit hours times a given rate		Seven	Separate rates for three types of institutions
Nevada	Faculty Salaries	Projected FTE Enrollments	Student-Faculty Ratio and Salary Rate	Faculty FTE positions times given salary rate			
	Instructional Supporting Salaries and Departmental Expense	FTE Faculty	Rate per FTE Position	Faculty FTE positions times a given rate			
New Jersey	Total Instruction and Departmental Expenses**	Projected FTE Enrollments	Rates per Student	FTE students times given rates		Four	Separate rates for three types of institutions
New York (CUNY formula)	Faculty and Academic Administration Salaries	Projected FTE Enrollments and Base Budget	Student-positions Ratios and Salary Rates	Base budget (preceding year) plus sum of new FTE positions times average salary rates (for each position type)		Three	

TABLE IV (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation		
					Academic Areas	Student or Instructional Levels	Institutions
New York (continued)	Clerical and Laboratory Positions	FTE Faculty and Base Budget	Faculty-Position Ratios and Salary Rates	Base Budget plus sum of new FTE positions times average salary rates (for each position)		Three	
	Operating Expenses	Projected FTE Enrollment	Rate per Student	Base budget plus sum of additional FTE students times a given rate			
North Dakota	Faculty Salaries	Projected FTE Enrollments	Student-Faculty Ratios and Salary Rates	Faculty FTE positions times given rates		Three	Separate rates for colleges and universities
	Other Instructional Expenses	Total Faculty Salaries Budgeted	Percentage	A percentage of the base factor			
Ohio	Faculty Salaries	Projected FTE Enrollments	Student-Faculty Ratios	Faculty FTE positions times average salary rate (at each institution)		Four	Each institution uses own average salary rate
	Other Instructional Expenses	Total Faculty Salaries Budgeted	Percentages	Within a percentage range of the base factor			
Oklahoma	Instructional Salaries	Projected FTE Enrollments	Student-Faculty Ratios and Salary Rates	Faculty FTE positions times given salary rates		Three	Separate salary rates for colleges and universities

TABLE IV (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation		
					Academic Areas	Student or Instructional Levels	Institutions
Oklahoma (continued)	Other Instructional Expenses	Total Instructional Salaries Budgeted	Percentage	A percentage of the base factor			
Pennsylvania	Faculty Salaries	Projected FTE Enrollments	Blank Factor	Faculty FTE positions (based on student-faculty ratios determined by each institution) times average salary rates (determined by each institution)		Four	Each institution determines its student-faculty ratios and its average salary rates
	Other Instructional Costs	Total Instructional Salaries Budgeted	Blank Factor	A percentage (determined by each institution) of the base factor			
South Carolina	Instructional Salaries	Projected FTE Enrollments	Student-Faculty Ratios and Salary Rates	Faculty FTE positions times given salary rates	Nineteen	Three	Separate salary rates for colleges and universities
	Other Instructional Costs	Total Instructional Salaries Budgeted	Percentage	A percentage of the base factor			Separate percentages for colleges and universities
South Dakota	Teaching Salaries	Projected FTE Enrollments	Student-Faculty Ratios and Salary Rates	Teaching faculty FTE positions times given salary rates	Twenty-seven	Four	Separate rates for colleges, technical colleges, and universities

TABLE IV (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation		
					Academic Areas	Student or Instructional Levels	Institutions
South Dakota (continued)	Research Salaries	FTE Teaching Faculty	Teacher-Researcher Ratios and Salary Rates	Research faculty FTE positions times given salary rates		Four	Separate rates for colleges, technical colleges, and universities
	Other Instructional Salaries	FTE Faculty	Faculty-Staff Ratios	Supporting FTE positions times average salary rates (for each type of institution)			Separate rates for colleges, technical colleges, and universities
Tennessee	Total Instructional Costs	Projected Credit Hours	Rates per Credit Hour	Projected credit hours times rates given for each level within each academic area	Thirty	Seven	
Texas	Faculty Salaries	Base Year Credit Hours	Rates per Credit Hour	Actual credit hours times rates given for each level and area	Nineteen	Four	
	Academic Administration Salaries	Total Faculty Salaries Budgeted and Base Year Credit Hours	Percentage	A percentage (adjusted to reflect credit hours produced and institutional complexity) of total faculty salaries			

TABLE IV (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation		
					Academic Areas	Student or Instructional Levels	Institutions
Texas (continued)	Other Instructional Expense	Base Year Credit Hours	Rates per Credit Hour	Actual credit hours times rates given for each level and each academic area	Nineteen	Four	
Virginia	Teaching Salaries	Projected FTE Enrollment	Student-Faculty Ratios and Salary Rates	Teaching faculty FTE positions times given salary rates		Seven	
	Research Salaries	FTE Teaching Faculty	Teacher-Researcher Ratios and Salary Rates	Faculty research FTE positions times given salary rates		Three	
	Academic Administration Salaries	Projected FTE Enrollments	Student-Administrator Ratios and Salary Rates	Administrative FTE positions times given salary rates		Three	
Washington	Faculty Salaries	Projected FTE Enrollments	Student-Faculty Ratios	Faculty FTE positions times a salary rate (calculated by each institution)		Four	Separate ratios for high cost areas at universities and each institution uses its own salary rate
	Other Instructional Expenses	FTE Faculty	Rate per FTE Position	Faculty FTE positions times a given rate			
West Virginia	Faculty Salaries	Projected FTE Enrollments	Student-Faculty Ratios and Salary Rates	Faculty FTE positions times given salary rates		Six	Separate salary rates for graduate faculty

TABLE IV (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation		
					Academic Areas	Student or Instructional Levels	Institutions
West Virginia (continued)	Supporting Staff Salaries	FTE Faculty	Faculty-Staff Ratios and Salary Rate	Staff FTE positions times a given salary rate		Two	Separate ratios for two instructional levels and academic administration
Wisconsin	Total Instructional Costs	Projected Additional Credit Hours and Base Budget	Rates per Credit Hour	Base budget (preceding year) plus additional instructional expenses (projected additional credit hours times rates for each level within each academic area)	Seven	Four	Each institution calculates its own rates

*Includes funds for organized activities related to instruction, organized research, and extension and public service.

**Includes funds for public service.

TABLE V

AVERAGE RATES PER CREDIT HOUR USED BY SIX STATES
FOR ESTIMATING FUNDS FOR INSTRUCTION
AND DEPARTMENTAL RESEARCH
1973-74

States	Lower Division	Upper Division	Master's and Professional	Doctoral
Alabama*	$24.99	$24.99	$ 61.88	$216.92
Arkansas	26.64	38.54	107.27	214.85
Louisiana**	28.04	41.47	116.33	239.35
Missouri (Univ. of Mo.)*	24.84	42.48	98.36	143.82
(others)*	17.76	30.37	70.33	
Tennessee	19.59	25.27	67.90	146.27
Texas	26.01	26.01	68.09	218.59

*Alabama and Missouri used fixed rates per credit hour and equated all credit hours to lower division hours within one academic area.

**Only 1971-72 rates were available.

Two states utilized the RBFU method and used FTE enrollments as the base unit: New Jersey multiplied total FTE students by specified rates per program to calculate the total I&DR budget, while New York added the sum of the additional projected FTE students times a given rate to the previous year's (base year) budget in calculating total departmental operating expenses. Four states multiplied their number of faculty or academic (faculty plus academic administrative) FTE positions by specified rates per position in calculating (1) supporting salaries and operating expenses (Nevada and Washington) or (2) departmental operating expenses (Florida and Georgia).

Ten states used the percentage of base factor method in calculating several parts of I&DR budgets. Each took a percentage of the total faculty salaries budgeted as the estimated funding required for academic administration salaries (Alabama, Louisiana, and Texas), departmental operating expenses (Maryland), and supporting staff salaries and departmental operating expenses (Louisiana, Mississippi, North Dakota, Ohio, Oklahoma, Pennsylvania, and South Dakota).

Seventeen states used the base factor-position ratio with salary rates method for calculating instructional personnel salaries. Four states converted projected FTE enrollments to credit hours against which credit hour-faculty position ratios were applied as follows:

	Lower Division	Upper Division	Master's and Professional	Doctoral
Colorado[11]	882-1	774-1	517-1	515-1
Florida[12]	1116-1	882-1	624-1	624-1
Georgia	1500-1	1080-1	550-1	550-1
Maryland[13]	1200-1	800-1	500-1	400-1

[11]Averages of ratios specified for 36 academic areas.

Thirteen states applied student-position ratios to projected FTE enrollments in calculating: (1) faculty FTE positions (Mississippi, Nevada, North Dakota, Ohio, Pennsylvania, South Dakota, Washington, and West Virginia); (2) faculty and academic administration FTE positions (New York and Virginia); (3) faculty and supporting FTE positions (Minnesota); or (4) total instructional FTE positions (Oklahoma and South Carolina). A comparison among the student-faculty ratios used by 12 states (as presented by Table VI) revealed wide variances in the ratios used for each instructional level. The number of students per FTE faculty position ranged from a high of 32 (South Dakota) to a low of 12 (Minnesota and Washington's high-cost programs) in lower division, from 32 (South Dakota) to seven (Washington's high cost programs) in upper division, from 24 (South Dakota) to six (Minnesota's high-cost programs) at the master's and professional level, and from 24 (South Dakota) to four (South Carolina) at the doctoral level. Base factor-position ratios were applied in seven states to the number of FTE faculty or academic positions in determining: (1) other FTE academic positions (Colorado and Florida); (2) FTE research positions (Florida, Georgia, South Dakota, and Virginia); or (3) FTE supporting positions (Florida, Georgia, New York, South Dakota, and West Virginia). The amount budgeted for instructional salaries was determined by multiplying positions justified (by type) by given or institutionally defined salary rates.

Ten states had budget formulas which differentiated among academic areas (ranging from a low of six in Wisconsin to a high of 40 in Colorado),

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[12]Averages of ratios specified for 20 academic areas.

[13]Fall term ratios equated to a full year.

TABLE VI

STUDENT-FACULTY RATIOS USED BY TWELVE STATES
FOR DETERMINING FACULTY FTE POSITIONS

States	Lower Division	Upper Division	Master's and Professional	Doctoral
Minnesota (low-cost)	20-1	16-1	13-1	13-1
(high-cost)	12-1	10-1	6-1	6-1
Mississippi	26-1	18-1	8-1	8-1
Nevada	20-1	20-1	20-1	20-1
New York (CUNY)	15-1	15-1	12-1	8.8-1
North Dakota	25-1	17-1	12-1	12-1
Ohio	16-1	16-1	10-1	8-1
Oklahoma (Colleges)	28-1	20-1	12-1	12-1
(Universities)	28-1	20-1	8-1	8-1
South Carolina (average)	14-1	14-1	9-1	4-1
South Dakota	32-1	32-1	24-1	24-1
Virginia	20-1	12-1	10-1	8-1
West Virginia	23-1	20-1	15-1	15-1
Washington (low-cost)	20-1	11-1	7-1	5-1
(high-cost)	12-1	7-1	7-1	5-1

while 23 states differentiated among student or instructional levels (ranging from three levels in nine states to nine levels in Colorado). Ten states (Alabama, Arkansas, Colorado, Florida, Louisiana, South Carolina, South Dakota, Tennessee, Texas, and Wisconsin) used budget formulas which were sensitive to different academic areas as well as student or instructional levels.

Fifteen states used formulas which differentiated among individual institutions or types of institutions. Five states (Colorado, Ohio, Pennsylvania, Washington, and Wisconsin) used separate ratios or salary rates for each institution while 12 specified separate ratios (Florida), percentages (Louisiana, Mississippi, and South Carolina), or rates (Maryland, Missouri, New Jersey, North Dakota, Oklahoma, South Carolina, South Dakota, and Washington).

2. Organized Activities Related to Instruction (OARI).

Three states had separate formula components for determining total OARI budget requests. A detailed comparison of the methods used by each state is presented in Table VII.

The methods (which used an all-inclusive approach) were: (1) rate per base factor unit where total projected FTE enrollments were multiplied by rates (specified for nine levels of instruction) per student (Ohio), and (2) the percentage of base factor where a percentage (different for colleges, specialized colleges, and universities in Oklahoma, and for each institution in Pennsylvana) of the total I&DR budget was budgeted.

Funds for OARI were also formula-derived in four other states, but were included as part of the total I&DR budget (Louisiana) or general administration and general expense budget (New Jersey, North Dakota, and South Carolina).

TABLE VII

METHODS OF BUDGETING OR ALLOCATING FUNDS
FOR ORGANIZED ACTIVITIES RELATED TO INSTRUCTION

State	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation
Ohio	Projected FTE Enrollment	Rates per Student	FTE students times given rates	Separate rates for each of nine levels of instruction
Oklahoma	Total Instructional Budget	Percentages	A percentage of the base factor	Separate percentage rates for colleges, specialized colleges, and universities
Pennsylvania	Total Instructional Budget	(Blank Factor)	A percentage (blank factor) of the base factor	Each institution uses its own percentage

3. Libraries.

A comparison among the methods used in 22 states for calculating library budget requests or allocations is presented in Table VIII. One state (New Jersey) included its library budget as part of the general administration and general expense budget request.

Eleven states took the all-inclusive approach and calculated total library requests two different ways: (1) the rate per base factor unit method where projected credit hours (Alabama) or actual base year credit hours (Texas) were multiplied by specified rates per credit hour or projected FTE enrollments were multiplied by specified rates per student (North Dakota and Ohio); and (2) the percentage of base factor method where the base factor was the total instructional salaries budget (Louisiana), the total I&DR budget (Maryland, Oklahoma, Pennsylvania, and South Carolina), the total I&DR budget plus the extension and public service budget (Georgia), or the additional I&DR budget due to projected enrollment increases (Wisconsin).[14]

The other 11 states performed separate calculations for: (1) salaries and collections (Colorado, Nevada, and Virginia); (2) salaries, collections, and operating expenses (Florida and Washington); (3) collections and all other expenses (Arkansas, Mississippi, and Tennessee); (4) salaries and all other operating expenses (Minnesota and New York); and (5) salaries only (West Virginia). Where salaries were calculated separately from other expenses, total FTE positions (professional and supporting, technical and service, or total personnel) were calculated

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[14]The additional I&DR budget was based on projected enrollment increases. The result of the percentage calculation was added to the base (previous year's) library budget.

TABLE VIII

METHODS OF BUDGETING OR ALLOCATING FUNDS FOR LIBRARIES

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation	
					Student or Instructional Levels	Academic Areas or Institutions
Alabama	Total Library Expense	Projected Credit Hours	Rates per Credit Hour	Credit hours times rates given for each level of instruction	Four	
Arkansas	Library Collections	Collection Deficiencies	Percentage and Rate per Volume	A percentage of collection deficiency volumes times a given rate		
	All Other Expenses	Projected Credit Hours	Rates per Credit Hour	Credit hours times rates given for each level of instruction	Four	
Colorado	Professional Salaries	Projected FTE Enrollments and FTE Faculty	Student-Staff Ratios and Faculty-Staff Ratio	Professional FTE positions times average salary rate	Three	Separate salary rates for each institution
	Supporting Staff Salaries	Professional FTE Staff	Professional-Supporting Staff Ratio	Supporting FTE positions times an average salary rate		Separate salary rates for each institution
	Library Collections	Collection Deficiencies	Percentage and Rate per Volume	A percentage of collection deficiency volumes (per Clapp-Jordan Formula) plus a percentage of existing collections times a rate per volume		Separate percentages for established and developing institutions and collection standards per academic area

TABLE VIII (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation: Student or Instructional Levels	Differentiation: Academic Areas or Institutions
Florida	Library Collections	FTE Faculty, Projected FTE Enrollment, and Collection Deficiencies	Percentages	Forty percent distributed equally between all institutions; 25 percent on the basis of FTE faculty and students, and diversity and level of programs; 25 percent on the basis of existing collection deficiencies (determined by the Washington Library Formula); and 10 percent for special requests	Two	Collection standards per academic area
	Personnel Salaries	Projected FTE Enrollments and Volumes to be Processed	A Student-Position Ratio, Student Level Weighting Indices, and Collection Range Factors	A percentage (based on ratios between unfilled FTE positions at each institution and the total FTE unfilled positions at all institutions of the total funds available	Four	Factors for three ranges of collections
	Operating Expenses	Library FTE Positions, Projected FTE Enrollments, and Volumes to be Processed	Weighting Factors	A percentage (based on ratios between weighted base factors at each institution and the total for all institutions) of the total funds available		
Georgia	Total Library Expenses	Total Amount Budgeted for Instruction and Dept. Research	Percentage	A percentage of the base factor		

TABLE VIII (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation: Student or Instructional Levels	Differentiation: Academic Areas or Institutions
Louisiana	Total Library Expenses	Total Instructional Salaries Budgeted	Percentage	A percentage of the base factor		
Maryland	Total Library Expenses	Total Instructional Budget	Percentage	An approximate percentage of the base factor		
Minnesota	Personnel Salaries	Projected FTE Enrollments	Student-Position Ratio and Salary Rates	Library FTE positions times average salary rates		Fixed number of positions per campus plus additional positions based on enrollment
	Other Library Expenses	Actual Amount Appropriated		An equal amount per institution		
Mississippi	Personnel Salaries and Operating Expenses	Total Instructional Budget	Percentage	A percentage of the base factor		
	Library Collections	Collection Deficiencies		A percentage (based on each institution's share of the total collection deficiencies--using SACS standards) of the total funds available		
Nevada	Personnel Salaries	Projected FTE Enrollments and Volumes to be Processed	Percentage and Salary Rate	A percentage of FTE positions justified (using the Washington Library Formula) times a salary rate	Four	

TABLE VIII (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation: Student or Instructional Levels	Differentiation: Academic Areas or Institutions
Nevada (continued)	Library Collections	Collection Deficiencies	Percentage and Rate per Volume	A percentage of the existing collection deficiencies (using the Washington Library Formula) times a given rate per volume		Collection standards per academic area
New York (CUNY formula)	Personnel Salaries	Projected FTE Enrollment and Base Budget	Student-Staff Ratios and Salary Rate	Base budget (preceding year) plus sum of new FTE positions times average salary rates	Three	
	Operating Expenses	Projected FTE Enrollment and Base Budget	Rate per Student	Base budget plus the sum of additional FTE students times a given rate		
North Dakota	Total Library Expense	Projected FTE Enrollment	Rate per Student	Projected FTE students times a given rate		Separate rates for colleges and universities
Ohio	Total Library Expenses	Projected FTE Enrollment	Rates per Student	Projected FTE students times rates given for each program area		Separate rates for program areas
Oklahoma	Total Library Expenses	Total Instructional Budget	Percentage	A percentage of the base factor		
Pennsylvania	Total Library Expenses	Total Instructional Budget	(Blank Factor)	A percentage (blank factor) of the base factor		Each institution uses its own percentage
South Carolina	Total Library Expenses	Total Instructional Budget	Percentage	A percentage of the base factor		
Tennessee	Personnel Salaries and Operating Expenses	Projected Credit Hours	Rates per Credit Hour	Projected credit hours times rates given for each level of instruction	Seven	

TABLE VIII (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation: Student or Instructional Levels	Differentiation: Academic Areas or Institutions
Tennessee (continued)	Library Collections	Collection Deficiencies	Percentage and Rate per Volume	A percentage of collection deficiencies (using ALA standards) times a given rate per volume		
Texas	Total Library Expenses	Base Year Credit Hours	Rates per Credit Hour	Actual credit hours times rates given for each level of instruction	Four	
Virginia	Professional Salaries	Projected FTE Enrollment	Student-Staff Ratios	Professional FTE positions times average salary rates	Two	Salary rates determined by each institution
	Supporting Salaries	Professional FTE Positions	Professional-Supporting Position Ratio	Supporting FTE positions times average salary rates		
	Library Collections	Collection Deficiencies	Percentage and Rate per Volume	A percentage of the base collection (using the Clapp-Jordan Formula) times a rate per volume for maintenance, and the actual deficiencies times a rate per volume	Three	Collection standards per academic area
Washington	Personnel Salaries	Projected FTE Enrollment and Volumes to be Processed	Student-Position Ratio, Student Level Weighting Indices, and Collection Range Factors	FTE positions times average salary rates		Salary rates determined by each institution

TABLE VIII (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation: Student or Instructional Levels	Differentiation: Academic Areas or Institutions
Washington (continued)	Library Collections	Collection Deficiencies	Percentage and Rate per Volume	A percentage of the base collection (using the Washington Library Formula) times a rate per volume for maintenance, and a percentage of the collection deficiencies times a rate per volume	Two	Percentages of deficiency elimination were given for each institution and collection standards per academic area
	Operating Expenses	Library FTE Positions and Number of Subscriptions	Rate per FTE Position and Subscriptions	FTE positions times a given rate plus the number of subscriptions times a given rate		
West Virginia	Professional Salaries	Projected FTE Enrollments	Student-Staff Ratio and Salary Rate	Professional FTE positions times a given rate		
	Non-Professional Salaries	Professional FTE Positions	Professional-Supporting Staff Ratio and Salary Rate	Non-professional FTE positions times a given salary rate		
Wisconsin	Total Library Expenses	Base Budget and Total Additional Instructional Costs	Percentage	Base budget (preceding year) plus a percentage of the total additional instructional costs		

separately from other expenses, total FTE positions (professional and supporting, technical and service, or total personnel) were calculated based on student-staff or faculty-staff ratios and multiplied by specified (West Virginia) or by institutionally determined (Virginia and Washington) salary rates. Where salaries and operating expenses were combined, a percentage of the base factor (Mississippi) or rates per projected credit hour (Arkansas and Tennessee) were used. Operating expenses budgeted separately were based on a percentage of total funds available (Florida) or by multiplying total library FTE positions and the number of subscriptions by fixed rates (Washington). New York added the cost of new FTE positions and additional operating expenses (due to projected additional enrollments) to the preceding year's budget.

Budget requests for library collections were calculated as a percentage of collection deficiencies times specified rates per volume (Arkansas, Colorado, Nevada, Tennessee, Virginia, and Washington). Two states (Florida and Mississippi) distributed allocated funds on the basis of each institution's percentage of the aggregate state collection deficiency. Collection deficiencies were calculated according to the Clapp-Jordan formula (Colorado and Virginia) which appears in Appendix D-1, the Washington Library formula (Florida, Maryland, Nevada, and Washington) which appears in Appendix D-2, the American Library Association Standards (Tennessee), or the Southern Association of Colleges and Schools' library standards (Mississippi). The literature from Arkansas did not specify how collection deficiencies were determined in that state.

Ten states (Alabama, Arkansas, Colorado, Florida, Nevada, New York, Tennessee, Texas, Virginia, and Washington) used formula (fixed) factors which differentiated among levels of instruction. Five states (Colorado,

Florida, Nevada, Virginia, and Washington) differentiated among academic areas in calculating collection deficiencies while one state (Ohio) used separate rates for each program area. Three states (Colorado, Virginia, and Washington) let each institution use its own salary rates, and three states (Colorado, Pennsylvania, and Washington) let each institution determine its own percentage rates. Other states differentiated among collection ranges (Florida) and colleges and universities (North Dakota).

4. General Administration (GA) and General Expense (GE).

A comparison among the methods used by states for justifying budget requests or allocating funds for general administration and general expense is presented in Table IX. Three states (Arkansas, New York, and Texas) out of the 17 which had separate formula components for this budget area included only general administration as a formula item.

Two states followed an itemized approach and calculated the total GA budget by multiplying projected enrollments by a specified rate per student (Alabama) or calculated GA salaries based on last year's budget plus the sum of new FTE positions (justified by projected additional enrollments) times average salary rates (New York). GE was calculated as a percentage of the total operating budget (Alabama) or the previous year's budget plus the sum of additional FTE enrollments multiplied by a specified rate per student (New York).

The remaining 15 states used two separate methods in an all-inclusive approach toward determining GA and GE budgets. The rate per base factor unit method was used in six states where projected FTE enrollments (New Jersey and Ohio), base year FTE enrollments (Texas), projected credit hours (Arkansas), and faculty FTE positions (Florida and Nevada) were base factors which were multiplied by given rates. The percentage of base

TABLE IX

METHODS OF BUDGETING OR ALLOCATING FUNDS
FOR GENERAL ADMINISTRATION AND GENERAL EXPENSE

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation	
					Student or Instructional Levels	Academic Areas or Institutions
Alabama	General Administration[1]	Projected FTE Enrollment	Rates per Student	FTE students times given rates		Separate rates for three enrollment ranges
	General Expenses	Total Operating Budget (excluding GA & GE)	Percentage	A percentage of the base factor		
Arkansas	General Administration	Projected Credit Hours	Rates per Credit Hour	Total credit hours times given rates		Separate rates for three types of insitutions (for credit hours exceeding 50,000)
Florida	General Administration and General Expense[1]	FTE Faculty	Rate per Faculty Position	A fixed amount plus the sum of faculty FTE positions times a given rate		
Georgia	General Administration and General Expense[1]	Total Instructional, Extension, and Public Service Budget	Percentage	A percentage of the base factor		
Louisiana	General Administration and General Expense[1]	Total Instructional Budget	Percentage	A percentage of the base factor		
Maryland	General Administration and General Expense[1]	Total Instructional Budget	Percentage	A percentage of the base factor		Percentages were regressive to total instructional budgets

TABLE IX (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation: Student or Instructional Levels	Differentiation: Academic Areas or Institutions
Mississippi	General Administration and General Expense [2]	Total Instructional Budget	Percentage	A percentage of the base factor		
Nevada	General Administration and General Expense	Total FTE Faculty	Rate per Faculty Position	Faculty FTE positions times a given rate		
New Jersey	General Administration and General Expense [3]	Projected FTE Enrollment	Rates per Student	FTE students times given rates	Three	Separate rates for three types of institutions
New York (CUNY formula)	General Administration Salaries	Projected FTE Enrollment and Base Budget	Student-Position Ratios and Salary Rates	Base budget (preceding year) plus the sum of new FTE positions times average salary rates for each position	Three	
	Operating Expenses	Projected FTE Enrollments and Base Budget	Rate per Student	Base budget (preceding year) plus the additional FTE students times a given rate		
North Dakota	General Administration and General Expense [4]	Total Instructional Salaries Budgeted	Percentage	A percentage of the base factor		
Ohio	General Administration and General Expense	Projected FTE Enrollment	Rates per Student	FTE students times rates given for each program		Four programs

TABLE IX (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation: Student or Instructional Levels	Differentiation: Academic Areas or Institutions
Oklahoma	General Administration and General Expense[1]	Total Instructional Budget	Percentage	A percentage of the base factor		
Pennsylvania	General Administration and General Expense	Total Instructional Budget	(Blank Factor)	A percentage (blank factor) of the base factor		Each institution uses its own percentage
South Carolina	General Administration and General Expense[4]	Total Instructional Budget	Percentage	A percentage of the base factor		
Tennessee	General Administration and General Expense	Total Educational and General Budget (excluding GA & GE)	Percentage	A percentage of the base factor (total amount budgeted for instruction, student services, libraries, and physical plant operation and maintenance)		
Texas	General Administration	Base Year Enrollment, Base Year Expenditures for Sponsored Reserch, and Total current E & G Budget	Rate per Student and Percentages	Fall semester headcount times given rates plus a percentage of base year expenditures for sponsored research plus a percentage of the total educational and general budget (excluding general administration and student services)		Separate rates given for three enrollment ranges.

[1]Includes funds for student services

[2]Includes funds for student services and physical plant operation and maintenance.

[3]Includes funds for student services, libraries, and organized activities related to instruction.

[4]Includes funds for student services and organized activities related to instruction.

factor method was used by nine states where a percentage of the total I&DR budget (Georgia, Louisiana, Maryland, Mississippi, Oklahoma, Pennsylvania, and South Carolina), instructional salaries budgeted (North Dakota), or total operating expense budget excluding GA and GE amounts (Tennessee) was used for estimating the budget figure. Both methods were used by Texas which added base year FTE enrollments multiplied by given rates plus percentages of base year expenditures for sponsored research plus the total educational and general budget (excluding GA and student services) being developed.

Eight states had budget formulas which differentiated among: (1) instructional levels (New Jersey used different rates while New York used different student-position ratios for three levels); (2) academic areas (Ohio specified separate rates for four program areas); (3) enrollment ranges (Alabama and Texas specified separate rates); and (4) institutions (Arkansas and New Jersey used different rates for three types of institutions, and Pennsylvania allowed each institution to use its own percentage).

5. Student Services.

Table X presents a comparison of the formula methods used by eight states in budgeting or allocating funds for student services. Every state followed an all-inclusive approach wherein three methods of calculation were used.

Rates per base factor unit were applied to projected credit hours (Arkansas), projected enrollments (Nevada, Ohio, and Tennessee), and projected service units (Washington) in calculating total student service budget requests. A percentage of base was applied to the total I&DR budgets in Pennsylvania, and Wisconsin added a percentage of the total additional instructional budget (based on projected enrollment increases)

TABLE X

METHODS OF BUDGETING OR ALLOCATING FUNDS
FOR STUDENT SERVICES

State	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation
Arkansas	Projected Credit Hours	Rate per Credit Hour	Total credit hours times a given rate	
Nevada	Projected FTE Enrollment	Rate per Student	FTE students times a given rate	
New York (CUNY Formula)	Projected FTE Enrollment and Base Budget	Student-Position Ratio, Salary Rates, and Rates per Student	Base budget (preceding year) plus the sum of professional FTE positions (based on student ratios) times average salary rates plus FTE students times given rates	Ratios and rates per student given three levels of instruction
Ohio	Projected FTE Enrollment	Rate per Student	FTE students times a given rate	
Pennsylvania	Total Instructional Expense		A percentage (blank factor) of the base factor	Each institution uses its own percentage
Tennessee	Projected Headcount Enrollment	Rate per Student	Projected Headcount (fall quarter only) times a given rate	

TABLE X (continued)

State	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation
Washington	Projected Service Units	Rates per Service Unit	Total service units (weighted for eight sub-groups of student services) times rates	Each institution uses its own rate
Wisconsin	Total Additional Instructional Costs and Base Budget	Percentage	Base budget (preceding year) plus a percentage of the total additional instructional cost	

to the base (previous year's) student services budget. New York used both the RBFU and BF-PR/SR method by adding the sum of professional FTE positions (based on student-position ratios) multiplied by specified salary rates plus projected FTE enrollment multiplied by specified rates per student to the base (previous year's) budget.

In two states the formula factors (percentages in Pennsylvania and rate per service unit in Washington) were determined by each institution, while another state (New York) specified different student-position ratios and rates per student for three levels of instruction.

Eleven other states (Alabama, Florida, Georgia, Louisiana, Maryland, Mississippi, New Jersey, North Dakota, Oklahoma, South Carolina, and Texas) included student services as part of their budget or allocation for general administration and general expense.

6. Organized Research.

Table XI presents a comparison of the methods used by the three states which treated organized research as a separate formula item. Mississippi allocated funds appropriated in two ways: 60 percent was distributed on a basis of each institution's percentage of the total number of graduate credit hours produced in the state by all public institutions the previous year; and the remaining 40 percent was distributed on the basis of each institution's percentage of the total amount of research cost-sharing expended in the state during the previous year.

In Oklahoma, the budget request was calculated as a percentage of the total I&DR budget. Texas added a percentage of total faculty salaries and a percentage of research expenditures during the previous year. Louisiana provided for organized research in its I&DR formula [illegible]nt.

TABLE XI

METHODS OF BUDGETING OR ALLOCATING FUNDS
FOR ORGANIZED RESEARCH

State	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation
Mississippi	Total Graduate Hours Produced and Total Base Year Research Cost-Sharing	Percentages	Sixty percent of state allocation distributed on basis of ratios (between institutions) to total graduate hours produced during previous year; and 40 percent on the basis of ratios (between institutions) to total research cost-sharing during previous year	
Oklahoma	Total Instructional Budget	Percentages	A percentage of the base factor	Percentages specified for each institution
Texas	Total Faculty Salaries plus Budgeted Research Expenditures in Base Year	Percentages	A percentage of total faculty salaries budgeted plus a percentage of sponsored research expenditures (previous year) times complexity factor	Complexity factor reflects weighted FTE enrollments by level and academic area

7. Extension and Public Service.

Four states had separate formula components for the calculation of budget requests or the allocation of funds for extension and public service. The methods utilized by each state are presented in Table XII.

Florida took an itemized approach and calculated professional salaries (using faculty-professional position ratios and salary rates), supporting salaries (using professional-supporting position ratios and salary rates), and operating expenses (based on a specified rate per professional FTE position) separately for public service only. Extension was a non-formula item.

The other three states calculated total extension and public service budget requests in an all-inclusive approach. A rate per base factor unit was applied to projected continuing education units[15] in Georgia, while Oklahoma and South Carolina took a percentage of their total I&DR budgets. None of the states differentiated among academic areas, levels of instruction, or institutions.

Two states (Louisiana and New Jersey) included extension and public service as part of their budget requests or allocations for instruction and departmental research.

8. Physical Plant Operation and Maintenance (PPOM).

The methods used by the 18 states which had separate formula components for budgeting and allocating funds for physical plant operation and maintenance are presented in Table XIII.

Ten states (Florida, Georgia, Louisiana, New Jersey, North Dakota,

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[15]A continuing education unit has been defined as 10 student contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction.

TABLE XII

METHODS OF BUDGETING OR ALLOCATING FUNDS
FOR EXTENSION AND PUBLIC SERVICE

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation	
					Student or Instructional Levels	Academic Areas or Institutions
Florida	Public Service Professional Salaries	FTE Teaching Faculty	Faculty-Position Ratio and Salary Rate	Professional FTE positions times an average salary rate (equalized for each institution)		
	Public Service Supporting Salaries	Professional-FTE Positions	Professional Supporting Position Ratio	Supporting FTE positions times an average salary rate		Institutions specify their own rates
	Public Service Operating Expenses	Professional FTE Positions	Rate per Professional Position	Professional FTE positions times a given rate		
Georgia	Extension and Public Service	Projected CEU's	Rate per CEU	Continuing education units times a given rate		
Oklahoma	Extension and Public Service	Total Instructional Budget	Percentage	A percentage of the base factor		Separate rates for universities and colleges
South Carolina	Extension and Public Service	Total Instructional Budget	Percentage	A percentage of the base factor		

TABLE XIII

METHODS OF BUDGETING OR ALLOCATING FUNDS
FOR PHYSICAL PLANT OPERATION AND MAINTENANCE

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation	
					Student or Instructional Levels	Academic Areas or Institutions
Alabama	Maintenance and Custodial Services	Gross Square Feet of Educational and General Building Space	Base Year Average Rates per Square Foot	Total square feet times the average base year rate		
Arkansas	Building Maintenance	Building Replacement Costs	Percentages	A percentage of building replacement costs (applied on a building-by-building basis)		
	Custodial Services	Gross Square Feet of Building Space	Rate per Square Foot	Total square feet times a given rate		
Florida	Total Expenses	Individual Institutional Requests	Percentages	A percentage of total positions requested and total operating budget requests were funded		
Georgia	Total Expenses	Gross Square Feet of Building Space	Rate per Square Foot	Total square feet times a given rate		
Louisiana	Total Expenses	Total Instructional Budget	Percentage	A percentage of the base factor		
Maryland	Personnel Salaries	Gross Square Feet of Building Space	Square Foot-Position Ratio, Percentages, and Salary Rates	Personnel FTE positions (administration, building maintenance, custodial services, and landscaping and grounds maintenance were percentages of total FTE positions based on a square foot-position ratio) times average salary rates for each category		

TABLE XIII (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation: Student or Instructional Levels	Differentiation: Academic Areas or Institutions
Maryland (continued)	Operating Expenses	Total Salaries	Percentages	A percentage (separate for each category) of the total salaries budgeted for administration, building maintenance, custodial services, and landscape and grounds maintenance		
Minnesota	Maintenance and Custodial Service FTE Positions	Gross Square Feet of Building Space	Square Foot-Position Ratios	FTE positions (based on square foot-position ratios given for each category) times salary rates		
	Utility and Fuel Expenses	Gross Square Feet of Building Space	Rate per Square Foot	Total square feet times a given rate		
Nevada	Building Operations, Custodial Service, and Repairs and Improvements	Outside Gross Square Feet of Building Space	Rates per Square Feet	Total outside gross square feet of buildings times given rates (separate for building operations and custodial services and for repairs and improvements)		
	Grounds Maintenance	Campus Acreage	Rates per Acre	Total acres times given rates per acre		Separate rates given for each institution
	Security	Base Budget	Percentage	Base budget (previous year) plus a percentage increase		
New Jersey	Total Expense	Projected FTE Enrollment	Rates per Student	FTE students times given rates		Separate rates for three types of institutions

TABLE XIII (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation	
					Student or Instructional Levels	Academic Areas or Institutions
North Dakota	Total Expense	Base Year Budget	Percentage	Base (preceding year) budget plus a percentage increase		
Ohio	Total Expense	Projected FTE Enrollment	Rates per Student	FTE students times rates (specified for each instructional level	Four	
Oklahoma	Total Expense	Total Instructional Budget	Percentage	A percentage of the base factor		
Pennsylvania	Total Expense	Total Instructional Budget	(Blank Factor)	A percentage (blank factor) of the base factor		Each institution uses its own percentages
South Carolina	Total Expense	Average Base Year Budgets	Percentage	Average budget of base years (last three years) plus a percentage increase —not to exceed a percentage of total instructional expenses budgeted		Percentage increase could be adjusted if building square footage increased at a greater rate than FTE enrollments
Tennessee	Total Expenses	Gross Square Feet of Building Space	Rate per Square Foot	Total educational and general building square footage times a given rate		
Texas	Building Maintenance	Building Replacement Costs	Percentages	A percentage of building replacement costs (applied on a building-by-building basis)		

TABLE XIII (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation: Student or Instructional Levels	Differentiation: Academic Areas or Institutions
Texas (continued)	Custodial Services	Gross Square Feet of Outside Building Space	Rate per Square Foot	Total educational, general and service building square footage times a given rate		
Virginia	Personnel Salaries	Gross Square Feet of Building Space	(Blank Factor)	Personnel FTE positions (based on gross square feet of building space divided by square foot-position ratios) times salary rates		Each institution uses its own ratio and salary rates
	Operating Expenses	Gross Square Feet of Building Space	Percentage	Total educational and general building square footage times base year (previous year) rate plus a percentage increase		Each institution determines its own rate
Washington	Utilities and Fuel	Gross Square Feet of Building Space	Adjustment Indices for Degree-day variation and Fuel and Electricity use Patterns	Total square footage times base year (previous year) rates adjusted by degree-day and use pattern indices		Each institution determines its own rates
	Building Maintenance	Building Replacement Costs	Percentages	A percentage of building replacement costs (applied on a building-by-building basis)		
	Janitoral Salaries	Gross Square Feet of Building Sapce	Square Foot-Position Ratios	Janitoral FTE positions (based on gross square feet of building space divided by square foot-position ratios) times salary rates		Each institution uses its own salary rates

TABLE XIII (continued)

State	Line Item	Base (Variable) Factors	Formula (Fixed) Factors	Method of Cost Calculation	Differentiation	
					Student or Instructional Levels	Academic Areas or Institutions
Washington (continued)	Grounds Maintenance	Total Campus Acreage	Acreage-Position Ratios	Grounds maintenance FTE positions (based on acreage-position ratios given for four types of land) times average salary rates		Each institution uses its own salary rates

Ohio, Oklahoma, Pennsylvania, South Carolina, and Tennessee) took an all-inclusive approach and figured the total PPOM amount with one calculation. The remaining states (Alabama, Arkansas, Maryland, Minnesota, Nevada, Texas, Virginia, and Washington) followed an itemized approach and calculated separately various line item components of plant operation and maintenance (e.g., building maintenance, custodial services, grounds maintenance, security, fuel and utilities, personnel salaries, and operating expenses).

The following base factors were used for estimating the total or portions of PPOM funding requirements: (1) building space (13 states); (2) building replacement costs (three states); (3) campus acreage (two states); (4) projected enrollments (three states); (5) current PPOM salaries budgeted (one state); (6) current instructional budget (three states); (7) previous year(s) budget (four states); and (8) individual institutional requests (one state).

The rate per base factor unit method was used by 12 states. Nine states (Alabama, Arkansas, Georgia, Minnesota, Nevada, Tennessee, Texas, Virginia, and Washington) multiplied total building square footage by rates per square foot. A comparison of these rates is presented in Table XIV. Nevada multiplied campus acreage by a given rate per acre in calculating the grounds maintenance budget. New Jersey and Ohio multiplied projected FTE enrollment by given rates per student to determine total PPOM budget requests.

Eleven states applied the percentage of base factor method. Arkansas, Texas, and Washington calculated building maintenance as a percentage of the current replacement cost of every building using the following indices:

TABLE XIV

RATES PER SQUARE FEET OF BUILDING SPACE USED BY SIX STATES FOR ESTIMATING FUNDS FOR PHYSICAL PLANT OPERATION AND MAINTENANCE 1973-74

State	Rate per Square Foot
Alabama (maintenance)	$ .30
(custodial service)	.30
Arkanasas (custodial service)	.30
Georgia (total PPOM)	1.503
Minnesota (fuel and utilities)*	.23
Nevada (building maintenance)	1.55
(repairs and improvements)	.22
Tennessee (total PPOM)	1.66
Texas (custodial service)	.344

*Only 1972-73 rates were available.

	Type of Construction[16]		
	Wood Frame	Masonry/Wood	Concrete
Air conditioned	1.90	1.45	1.25
Non-air conditioned	1.75	1.30	1.10

Louisiana and Oklahoma applied fixed percentages (12.0 and 14.0, respectively), while Pennsylvania applied institutionally determined percentages (blank factors) to the total I&DR budget in calculating total PPOM requirements. Maryland took a percentage (specified for each program category) of total PPOM salaries budgeted in determining PPOM operating expenses. Florida funded a percentage of each institution's request for PPOM personnel and operating expenses. Three states used a base (previous) year budget plus a percentage increase for the total PPOM budget (North Dakota and South Carolina) and for security budget requests (Nevada).

Base factor-position ratios were used in four states in determining PPOM FTE positions. Maryland determined total FTE positions using a single building square foot-position ratio (8,000 to 1). Minnesota calculated custodial FTE positions (18,000 to 1) and maintenance FTE positions (20,000 to 1) based on building square footage-position ratios. Washington used a building square footage-position ratio (20,000 to 1) for janitors and four acreage-position ratios (from 4 to 1 for high landscaping to 32 to 1 for least landscaping campus acreage) for grounds maintenance FTE positions. Virginia used building square footage-position ratios (determined by each institution) for all PPOM FTE positions.

Only six states had formula factors that differentiated among institutions. Nevada used different rates per campus in calculating

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[16]Arkansas multiplied building space by cost per square foot rates specified for 33 building types, while Texas and Washington multiplied original construction costs by indices from the Markel Construction Cost Appraisal Chart.

the grounds maintenance budget for its two-campus university. New Jersey used separate rates for three types of institutions in calculating the total PPOM budget request. Pennsylvania, Virginia, and Washington permitted institutions to use blank factors (percentage rates, rates per square foot of building space, and salary rates). Ohio provided separate rates per FTE student for projected enrollments in four instructional levels.

Summary of Methods and Base Factors Used

Tables XV through XXII summarize the methods and base factors used by each state in calculating the funding requirements of each budget area.

II. IDENTIFICATION OF ACCEPTABLE BUDGET FORMULAS

Development of Performance Criteria

The concept of acceptable budget formulas parallels that of generally recognized functional budget areas and generally accepted accounting principles. The criteria used and/or proposed by Boling, Miller, Walton, and Stumph (see Appendices E-1 through E-4) as well as the goals, objectives, and ideals presented in the literature were extrapolated, refined, and summarized in 10 statements. These statements were written in performance objective formats and appeared as follows:

1. A budget formula should recognize the diverse financial needs of institutions, as indicated by its sensitivity to the mission, role, institutional complexity, location, and any other factors which serve to differentiate among the financial requirements of individual colleges and universities.

2. A budget formula should be broad-based and addressed to the total financial operating needs (exclusive of auxiliary services) of

TABLE XV

SUMMARY OF METHODS USED BY STATES FOR DETERMINING INSTRUCTION AND DEPARTMENTAL RESEARCH BUDGETS

	Formula Methods		
Base Factors	Rate per Base Factor Unit	Percentage of Base Factor	Base Factor - Position Ratio with Salary Rates
Projected Credit Hours	Alabama (F,D) Arkansas (F) Missouri (T) Tennessee (T) Wisconsin (T)[1]		Colorado (F) Florida (F) Georgia (F) Maryland (F)
Base Year Credit Hours	Louisiana (F) Texas (F,O)		
Projected FTE Enrollment	New York (D)[1] New Jersey (T)		Minnesota (F,S) Mississippi (F) Nevada (F) New York (A,F)[1] North Dakota (F) Ohio (F) Oklahoma (I) Pennsylvania (F) South Carolina (I) South Dakota (F) Virginia (A,F) West Virginia (F) Washington (F)
FTE Faculty or Academic Positions	Florida (D) Georgia (D) Nevada (O) Washington (O)		Colorado (A) Florida (A,R,S) Georgia (R,S) New York (S)[1] South Dakota (R,S) Virginia (R) West Virginia (S)

TABLE XV (continued)

Base Factors	Formula Methods: Rate per Base Factor Unit	Formula Methods: Percentage of Base Factor	Formula Methods: Base Factor-Position Ratio with Salary Rates
Total Faculty or Instructional Salaries Budgeted		Alabama (A)[2] Louisiana (A,O) Maryland (D) Mississippi (O) North Dakota (O) Ohio (O) Oklahoma (O) Pennsylvania (O) South Carolina (O) Texas (A)[3]	

Key: A = Academic Administration Salaries
D = Departmental Operating Expenses
F = Faculty Salaries
I = Instructional (faculty, administration, and supporting) Salaries
O = Other Instructional (supporting staff salaries and departmental operating expenses) Costs
R = Research Faculty Salaries
S = Supporting Staff Salaries
T = Total Instructional Expenses

[1]Adds amount calculated to base (previous) year budget.
[2]Also includes departmental operating expenses budget in base factor.
[3]Also includes base (previous) year credit hours in base factor.

TABLE XVI

SUMMARY OF METHODS USED BY STATES FOR DETERMINING BUDGET REQUESTS FOR ORGANIZED ACTIVITIES RELATED TO INSTRUCTION

	Formula Methods		
Base Factor	Rate per Base Factor Unit	Percentage of Base Factor	Base Factor-Position Ratio with Salary Rates
Projected FTE Enrollments	Ohio		
Total I & DR Budget		Oklahoma Pennsylvania	

TABLE XVII

SUMMARY OF METHODS USED BY STATES FOR DETERMINING LIBRARY BUDGETS

	Formula Methods		
Base Factor	Rate per Base Factor Unit	Percentage of Base Factor	Base Factor-Position Ratio with Salary Rates
Projected Credit Hours	Alabama (T) Arkansas (O) Tennessee (P)		
Base Year Credit Hours	Texas (T)		
Projected FTE Enrollment	New York (O)[1] North Dakota (T) Ohio (T)		Colorado (P) Florida (P) Minnesota (P) Nevada (P) New York (P)[1] Virginia (P,S) West Virginia (P) Washington (P)
Collection Deficiencies	Arkansas (C) Colorado (C) Florida (C) Nevada (C) Tennessee (C) Washington (C)	Arkansas (C) Colorado (C) Florida (C) Mississippi (C) Nevada (C) Tennessee (C) Virginia (C) Washington (C)	
Faculty FTE Positions			Colorado (P)
Library Professional FTE Positions	Washington (O)		Colorado (S) West Virginia (S)
Total I & DR Budget		Georgia (T)[2] Maryland (T) Mississippi (P,O) Oklahoma (T) Pennsylvania (T) South Carolina (T)	

TABLE XVII (continued)

Base Factor	Formula Methods		
	Rate per Base Factor Unit	Percentage of Base Factor	Base Factor-Position Ratio with Salary Rates
Total Instructional Salaries Budgeted		Louisiana (T) Wisconsin (T)[3]	
Total Amount Appropriated		Minnesota (O)	
Institution/State-wide FTE Faculty and FTE Enrollment Ratios		Florida (C,O)	

Key: C = Collections
O = Operating Expenses
P = Professional Salaries
S = Supporting Staff Salaries
T = Total Library Expenses

[1]Calculation based on additional enrollment increase and added to
[2]base year budget.
[2]Budget for extension and public service added to base factor.
[3]Calculation based on additional instructional salaries (due to projected enrollment increases) and added to base year budget.

TABLE XVIII

SUMMARY OF METHODS USED BY STATES FOR DETERMINING GENERAL ADMINISTRATION AND GENERAL EXPENSE BUDGETS

	Formula Methods		
Base Factors	Rate per Base Factor Unit	Percentage of Base Factor	Base Factor-Position Ratio with Salary Rates
Projected Credit Hours	Arkansas (GA)		
Projected FTE Enrollment	Alabama (GA) New Jersey (T) New York (O)[1] Ohio (T)		New York (S)[1]
Base Year FTE Enrollment	Texas (GA)		
Base Year Sponsored Research Plus Total Current E & G Budget		Texas (GA)	
FTE Faculty Positions	Florida (T) Nevada (T)		
Total I & DR Budget		Georgia (T) Louisiana (T) Maryland (T) Mississippi (T) Oklahoma (T) Pennsylvania (T) South Carolina (T)	
Total E & G Budget (excluding GA & GE)		Alabama (GE) Tennessee (T)	
Total Instructional Salaries Budgeted		North Dakota (T)	

Key: GA = General Administration Only; GE = General Expense Only; O = Operating Expenses; P = Personnel Salaries; and T = General Administration and General Expense.

[1]Base (Previous) Year Budget Included in Base Factor.

TABLE XIX

SUMMARY OF METHODS USED BY STATES FOR DETERMINING STUDENT SERVICE BUDGETS

	Formula Methods		
Base Factors	Rate per Base Factor Unit	Percentage of Base Factor	Base Factor-Position Ratio with Salary Rates
Projected Credit Hours	Arkansas		
Projected FTE Enrollments	Nevada New York Ohio Tennessee		New York
Total I & DR Budget		Pennsylvania Wisconsin	
Projected Service Units	Washington		

TABLE XX

SUMMARY OF METHODS USED BY STATES FOR DETERMINING ORGANIZED RESEARCH BUDGETS

	Formula Methods		
Base Factors	Rate per Base Factor Unit	Percentage of Base Factor	Base Factor-Position Ratio with Salary Rates
Institution/State-wide Base Year Graduate Credit Hours		Mississippi[1]	
Institution/State-wide Base Year Research Cost-Sharing		Mississippi[2]	
Total Faculty Salaries Budgeted Plus Base Year Research Budget		Texas	
Total I & DR Budget		Oklahoma	

[1]Sixty percent of available research funds.
[2]Forty percent of available research funds.

TABLE XXI

SUMMARY OF METHODS USED BY STATES FOR
DETERMINING EXTENSION AND PUBLIC SERVICE BUDGETS

	Formula Methods		
Base Factors	Rate per Base Factor Unit	Percentage of Base Factor	Base Factor-Position Ratio with Salary Rates
FTE Faculty Positions			Florida (PP)
FTE Professional Positions	Florida (PO)		Florida (PS)
Projected Continuing Education Units	Georgia (T)		
Total I & DR Budget		Oklahoma (T) South Carolina (T)	

Key: PP = Public Service Professional Salaries Only
PO = Public Service Operating Expenses Only
PS = Public Service Supporting Staff Salaries Only
T = Total Extension and Public Service

TABLE XXII

SUMMARY OF METHODS USED BY STATES IN DETERMINING PHYSICAL PLANT OPERATION AND MAINTENANCE BUDGETS

	Formula Methods		
Base Factors	Rate per Base Factor Unit	Percentage of Base Factor	Base Factor-Position Ratio with Salary Rates
Square Feet of Building Space	Alabama (M) Arkansas (C) Georgia (T) Minnesota (U) Nevada (M,C,R) Tennessee (T) Texas (C) Virginia (O) Washington (C,U)		Maryland (P) Minnesota (P) Virginia (P) Washington (P)
Building Replacement Costs		Arkansas (B) Texas (B) Washington (B)	
Acreage	Nevada (G)		Washington (G)
Total I & OR Budget		Louisiana (T) Oklahoma (T) Pennsylvania (T)	
Projected FTE Enrollments	New Jersey (T) Ohio (T)		
PPOM Salaries Budgeted		Maryland (O)	
Budget Requests		Florida (T)	
Base (previous) Year(s) Budget		North Dakota (T) Nevada (S) South Carolina (T)	

Key: B = Building Maintenance Expenses; C = Custodial Expenses; G = Grounds Maintenance Expense; M = Total Maintenance; O = Operating Expenses; P = Personnel Salaries; S = Security Expenses; T = Total Plant Operation and Maintenance Expenses; and U = Utilities and Fuel Expenses.

institutions, as shown by its recognition of the individual functional areas of operation and where appropriate, should utilize quantitative data directly related to the financial requirements of each functional area to be funded.

3. A budget formula should take into account the varying costs of instruction, as demonstrated by its recognition of the varying funding requirements for individual disciplines as well as levels of instruction.

4. A budget formula should provide for the equitable treatment of all institutions of like types, as evinced by its capability for creating data on similar programs in a uniform and comparable manner.

5. A budget formula should be objective, as indicated by its utilization of quantitative data in determining the financial needs of colleges and universities.

6. A budget formula should recognize the qualitative efforts of individual institutions, as demonstrated by its built-in incentives of additional funds for the successful completion of pre-stated institutionally defined goals and objectives.

7. A budget formula should promote efficiency and economy in operation, as indicated by its ability to facilitate comparisons among similar institutions and programs on a state, regional, or national level.

8. A budget formula should be designed to accommodate the dynamic nature of higher education, as evinced by its flexible design and its provision for the periodic change of fixed inputs and/or revisions.

9. A budget formula should lend itself to clarity for and comprehension by all parties concerned, as shown by its straightforward construction which clearly demonstrates the relationship between fixed and

and variable components.

10. A budget formula should not be used for the detailed control of expenditures, as demonstrated by its being applicable only for justifying budget requests of or allocating funds to colleges and universities, and for limited internal budgeting between functional areas, discipline areas, and levels of instruction.

The Review Panel

Nine educators (see Appendix A), distinguished by their contributions to and interest in the field of higher educational finance, were asked to review and rate each criterion as being (1) very important, (2) of some importance, or (3) not important. Specific comments pertaining to each criterion were also solicited.

The collective ratings of each criterion by the panel are presented in Table XXIII. As the results indicate, every criterion was considered important in the collective mind of the panel. Even the lowest rated criterion (number six) received four "very important" and three "of some importance" ratings. However, many panel members offered comments which also served as invaluable input in assessing the validity of each criterion.

The first criterion, which concerned the recognition of diverse financial needs, drew several comments. Furman advised against the inclusion of too many factors:

> A formula or formulae should be sensitive enough to recognize the major factors affecting financial requirements. Recognition of every conceivable factor tends to make the structure either fall of its own weight or tends

TABLE XXIII

REVIEW PANEL RATINGS OF PERFORMANCE CRITERIA

Criterion	Very Important	Of Some Importance	Not Important	Not Rated
1. Recognizes diverse financial needs	7	2		
2. Broad-based	7	1	1	
3. Recognizes varying costs of instruction	6	2		1
4. Equitable	7	2		
5. Objective	6	1		2
6. Qualitative incentives	4	3	2	
7. Efficiency and economy	5	3	1	
8. Flexible	8	1		
9. Clear and comprehensible	9			
10. Not used for detailed control	8	1		

to induce institutions to make changes for a formula benefit.[17]

Two panel members questioned the inclusion of "location" as a major factor for differentiating among financial needs. Wilson stated that "where an institution is located is less important than what it does."[18] Millett voiced the same argument, but carried it further:

> The essential difference is that of programs offered; location is not a major factor insofar as instructional expenditures are concerned. Admission policy is an important difference. The number of students is another important difference.[19]

On the other hand, Chambers applauded the recognition of many factors:

> This is a prime principle because the chief objection to the use of any formula is its tendency to promote rigidity, fixity, and senseless uniformity among insitutions and programs.[19]

Furman qualified his endorsement of the second criterion, which required the recognition of total financial operating needs, by adding "to the extent that operations can be meaningfully formalized."[21]

Several comments were made in response to the criterion which called for the equitable treatment of all institutions of like types:

> Equity is an essential of formula budgeting; like programs of like needs must be treated the same regardless of [the] institutional setting.[22]
>
> . . . the concept of "equity" as here used is more one of political compromise than one having a clear intellectual basis. Moreover, I recoil from the idea of treating data on similar

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[17]James Furman, Council on Higher Education, Olympia, Washington, questionnaire response, August 13, 1973.

[18]Logan Wilson, President Emeritus, American Council on Education, Washington, D.C., questionnaire response, August 14, 1973.

[19]John D. Millett, Academy for Educational Development, Washington, D.C., questionnaire response, August 14, 1973.

[20]M. M. Chambers, Illinois State University, Normal, questionnaire response, August 31, 1973.

[21]Furman, op. cit. [22]Millett, op. cit.

programs in a uniform and comparative manner" because it is almost wholly an accountant's concept, repugnant to the thought that uniformity in higher education is to be avoided as a plague; and "comparability" can never be more than approximate, being obviously unattainable with exact precision.[23]

The panel rated the sixth criterion, which recognized qualitative efforts, lower. Millett wrote:

> This is very difficult to determine on an objective basis. What constitutes quality? If we had measures of "value added" during the educational process, we might evaluate the quality of the educational effort. You can't equate quality with test scores![24]

Furman warned of another pitfall:

> Not that I disagree with incentives for performance. Rather, that these incentives should not be built into a formula where they tend to be continuing--often after the reason [for their inclusion] has been forgotten. They should operate outside--as modifiers to--the formula mechanism.[25]

And Chambers carried their argument further:

> I don't rate this tops because it implies that every goal must be "pre-stated," and thus rules out flexibility. . . . . Planning should not create institutional zombies.[26]

In addition, the criterion which called for the promotion of efficiency and economy did not receive a very high rating. Wilson remarked:

> In theory this is so, but in fact it is difficult to make inter-institutional comparisons of educational outcomes; moreover, there is in many instances a reluctance to publicize such comparisons.[27]

Chambers offered reasons why institutions resist comparing data:

> The caution here is that the comparisons are often fantastically erroneous. The legitimate uses of comparative data are severely limited by common sense and by the most painstaking observation. They are easily mis-stated and easily misunderstood.[28]

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[23]Chambers, op. cit.

[24]Millett, op. cit.

[25]Furman, op. cit.

[26]Chambers, op. cit.

[27]Wilson, op. cit.

[28]Chambers, op. cit.

Furman saw a conflict between promoting efficiency and the reasons for formula usage:

> Efficiency and economy are promoted by analysis and policy decisions (or reduced funding)--not by a formula. A formula cannot do comparable cost analysis and still serve its purpose as a baseline tool.[29]

Although the criterion which specified flexibility and periodic review received the second highest rating, one panel member argued strongly for its recognition as the most important:

> This [one] is [the] most important of all! There is no doubt that any statewide formula should be carefully reviewed at least once a year . . . applying the formula should be only a preliminary step, to be followed by the most thoughtful and soul-searching appraisal of the non-quantifiable elements each year.[30]

And finally, in support of his rating, Furman offered the following comments concerning the last criterion:

> A relationship between expenditures and the budget base is necessary if there is to be credibility. Detailed control, however, should not be exerted on every component of a formula system since considerable averaging is inevitably involved.[31]

Ranking and Selection of Criteria

Based on the review panel's ratings and comments, the performance criteria were ranked and grouped as follows: (1) "most important" (criteria 9, 8, and 10); (2) "of some importance" (criteria 1, 4, 2, 3, and 5); and (3) "least important" (criteria 7 and 6). The rank order and grouping is presented in Table XXIV.

Only the eight criteria considered "most important" and "of some importance" were used for identifying acceptable budget formulas. (The

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[29]Furman, op. cit.

[30]Chambers, op. cit.

[31]Furman, op. cit.

TABLE XXIV

RANKING AND GROUPING OF PERFORMANCE CRITERIA
BASED ON REVIEW PANEL'S RATINGS

Criterion Number	Rank Order	Group
9	1	Most important
8	2.5	
10	2.5	
1	4.5	Of some importance
4	4.5	
2	6	
3	7	
5	8	
7	9	Least important
6	10	

two criteria considered "least important" were excluded in order to recognize the panel's uncertainty reflected in the comments received.) In order to be rated "acceptable," a budget formula had to meet the minimum standards of the three "most important" criteria and at least three of the five "of some importance" criteria.

Application of Performance Criteria to Budget Formulas

Both the characteristics (as revealed by the comparative analysis) and the methods of applying each formula (gleaned from the literature received from the states or through personal interviews) were considered when applying the performance criteria. Subjective judgement was limited to deciding whether or not each formula met the minimum requirements of each criterion. The results of those decisions are presented in Table XXV and were as follows:

1. Clear and comprehensible (statement number 9).

The budget formulas in 22 states were judged to be clear and comprehensible, as evinced by their straightforward construction and simple application of base and formula factors. However, the formulas used by Arkansas, Georgia, Oklahoma, South Carolina, Tennessee, and West Virginia were found to be clearer and presented in a manner which would more easily be understood by the general public. The formulas used by Florida, Virginia, and Washington were very detailed or were not presented in a manner (by the literature) which would promote general understanding. The Texas formula was judged to be a borderline case (but accepted) due to the "complexity factor" calculation for organized research.

2. Flexible (statement number 8).

Budget formulas were considered flexible if they satisfied either

TABLE XXV

EXTENT TO WHICH BUDGET FORMULAS USED IN TWENTY-FIVE STATES SATISFIED THE PERFORMANCE CRITERIA OBJECTIVES

States	Most Important			Of Some Importance				
	Clear and Comprehensible	Flexible	Not Used For Detailed Control	Recognizes Diverse Financial Needs	Equitable	Broad-based	Recognizes Varying Instructional Costs	Objective
Alabama	Yes		Yes		Yes		Yes	Yes
Arkansas	Yes	Yes	Yes		Yes		Yes	Yes
Colorado	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Florida			Yes	Yes	Yes		Yes	Yes
Georgia	Yes	Yes	Yes		Yes	Yes		Yes
Louisiana	Yes		Yes	Yes	Yes		Yes	Yes
Maryland	Yes	Yes	Yes	Yes	Yes			Yes
Minnesota	Yes		Yes		Yes			Yes
Mississippi	Yes		Yes	Yes	Yes			Yes
Missouri	Yes		Yes	Yes	Yes			Yes
Nevada	Yes	Yes	Yes		Yes	Yes		Yes
New Jersey	Yes			Yes	Yes			Yes
New York (CUNY)	Yes		Yes		Yes			Yes
North Dakota	Yes			Yes	Yes			Yes
Ohio	Yes	Yes	Yes	Yes	Yes			Yes
Oklahoma	Yes		Yes	Yes	Yes			Yes

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TABLE XXV (continued)

States	Most Important			Of Some Importance				
	Clear and Comprehensible	Flexible	Not Used For Detailed Control	Recognizes Diverse Financial Needs	Equitable	Broad-based	Recognizes Varying Instructional Costs	Objective
Pennsylvania	Yes	Yes	Yes	Yes	Yes			Yes
South Carolina	Yes	Yes	Yes	Yes	Yes		Yes	Yes
South Dakota	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Tennessee	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Texas	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Virginia			Yes	Yes	Yes			Yes
Washington			Yes	Yes	Yes			Yes
West Virginia	Yes	Yes	Yes	Yes	Yes			Yes
Wisconsin	Yes		Yes	Yes	Yes		Yes	Yes

of the following minimum requirements: (a) a majority of the formula components had a provision for modified treatment or could be supplemented by special requests; or (b) the formula was reviewed and/or modified annually or biennially. Twelve state budget formulas met these conditions. Arkansas, South Carolina, South Dakota, and West Virginia had specific provisions for institutions to submit special requests to override the formula request or to ask for special consideration justified by subjective data. In Ohio, each institution prepared its own expenditure model to verify or serve as a basis for requesting adjustments to the expenditure models developed by the Board of Regents. Colorado, Georgia, Maryland, Nevada, Tennessee, and Texas appeared to have reviewed and/or revised their formulas annually or biennially, and in Pennsylvania, flexibility was assured by the formula design which accepted "blank factors" (institutionally determined formula factors, e.g., student-faculty ratios, percentages, etc.).

3. Not used for detailed budgetary control (statement number 10).

No evidence was found in the design or in the literature accompanying 23 budget formulas which indicated their use for internal budgetary control of expenditures. However, New Jersey's unique system of formula/program budgeting specifically called for narrative statements which detail how the institution plans to expend the resources generated by the formula, or as stated in the literature: "The institution's budget submission is no longer an asking budget, instead it is an operating plan of expenditures related to measurable objectives, within total formula dollars."[32] North Dakota's budget formula was described as

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[32]New Jersey Department of Higher Education and Department of the Treasury, Supplemental Budget Instructions for Higher Education Institutions (Trenton: State of New Jersey, 1973), p. 21.

being designed to: "Provide broad guidelines on internal allocations at each institution."[33] For these reasons, the formulas used by New Jersey and North Dakota were not considered free from exerting internal budgetary control.

4. Recognizes diverse financial needs (statement number 1).

Seventeen budget formulas recognized the diverse financial needs of different institutions, by differentiating among individual institutions or types of institutions in calculating the funding requirements for instruction and departmental research or in two or more of the remaining budget areas: 16 states had instruction and departmental research components which used (1) different salary rates (Colcrado, Maryland, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, and West Virginia), (2) different base factor rates (New Jersey and Wisconsin), or (3) different ratios or percentages (Florida, Louisiana, Mississippi, Missouri, Pennsylvania, South Carolina, Washington, and West Virginia); two states (Oklahoma and Pennsylvania) used different percentages for calculating funds for organized activities related to instruction; five states had library components which used (1) different salary rates (Colorado, Virginia, and Washington), (2) different base factor rates (North Dakota), or (3) different percentages (Pennsylvania); two states had general administration and general expense formula components which used different base factor rates (New Jersey) or different percentages (Pennsylvania); two states (Pennsylvania and Washington) let each institution determine its own percentage or rate for calculating

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[33]Letter from Floyd B. Case, Director of Fiscal Affairs, North Dakota State Board of Higher Education, Bismarck, June 25, 1973.

student services; one state (Oklahoma) used different percentages in calculating organized research; two states had extension and public service formula components which allowed each institution to specify its own salary rate (Florida) or used different percentages (Oklahoma); and six states differentiated among institutions in their physical plant operation and maintenance formula components by (1) using different salary rates (Minnesota, Virginia, and Washington), (2) using different base factor rates (Nevada, New Jersey, and Washington), or (3) using different percentages (Pennsylvania). Viewed on a state-by-state basis, Pennsylvania differentiated among institutions in six budget areas, Colorado, Florida, North Dakota, and Virginia in three areas, while the remaining nine states differentiated among institutions in their instruction and departmental research formula components only.

5. Equitable (statement number 4).

Every state budget formula was found to be equitable in that each one treated the data on similar programs in similar institutions in a uniform and comparable manner. This judgement was predicated upon the assumption that the differentiation among institutions by 17 states was made to recognize different types of institutions where programs were not similar.

6. Broad-based and addressed to the total operating needs (statement number 2).

The minimum requirements for meeting this criterion were the formula-calculation of five budget areas using base factors directly related to the expenditures in each area. Acceptable base factors for each area were:

a. Instruction--student credit hours or FTE enrollments.

b. Organized activities--instructional base factors or instructional budget.

c. Libraries--collection deficiencies and instructional base factors or instructional budgets.

d. General administration and expense--instructional base factors or total educational and general budget (excluding GA and GE).

e. Student services--instructional base factors or instructional budget.

f. Organized research--research cost-sharing.

g. Extension and public service--continuing education units or instructional budget.

h. Plant operation and maintenance--square feet of building space, acres of land, or building replacement costs.

Only four states were found which had budget formulas that met the minimum requirements for being considered broad-based. Although two states (Louisiana and Oklahoma) calculated the entire operating budget by formula, neither met the second stipulation that at least five budget areas be based on variable factors directly related to the financial requirements of each budget area. The states which met this criterion were Georgia, Nevada, Tennessee, and Texas.

7. Recognizing varying instructional costs (statement number 3).

The minimum requirement for meeting this criterion was having an instructional formula component which was sensitive to at least three student or instructional levels within separate academic areas. The budget formulas used in Alabama (3 levels within 15 academic areas), Arkansas (5/16), Colorado (9/40), Florida (5/25), Louisiana (5/9),

South Carolina (3/19), South Dakota (4/27), Tennessee (7/30), Texas (4/19), and Wisconsin (4/6) were found to have met these requirements.

8. Objective (statement number 5).

Every budget formula was judged objective since each one was based on quantitative data.

Acceptable Budget Formulas

The budget formulas used in 12 states were found to meet the minimum standards of acceptability as measured by the performance criteria. None, however, satisfied all eight criteria. Five states had budget formulas which satisfied seven criteria--the Colorado, South Carolina, and South Dakota formulas were not broad-based, while the Tennessee and Texas formulas both lacked provisions for recognizing the diverse financial needs of different institutions. The budget formulas used in Arkansas, Georgia, Maryland, Nevada, Ohio, Pennsylvania, and West Virginia each met six criteria.

SECTION III

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY OF RESULTS

The information presented in the complete study may be summarized as follows:

1. Budget formulas were used in 25 states. The formulas in 21 states (Alabama, Araknsas, Colorado, Florida, Georgia, Louisiana, Maryland, Mississippi, Missouri, Nevada, New Jersey, North Dakota, Ohio, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, Washington, and West Virginia) were applied statewide. The Minnesota formula was applied only to the state colleges and excluded the University of Minnesota system. The formula used in New York applied only to the CUNY system; the SUNY system used guidelines. In Oklahoma, two institutions were not funded under the regular formula; instead, their allocations were determined by a new program/formula budget system being pilot-tested. The Wisconsin formula was used only for the University of Wisconsin system. The geographical distribution of the formula states is presented in Table XXVI.

2. A majority of the budget formulas was used for developing or justifying operating budget requests. Only four states (Florida, Louisiana, Mississippi, and Oklahoma) appeared to have actually used formulas for allocating lump-sum appropriations from their legislatures among institutions.

3. Two separate budgeting techniques were found to be in use: zero-base budgeting (where the operating budget is developed anew each year and justified by objective or subjective data) was practiced by 23 formula states, and incremental budgeting (where the previous year's

TABLE XXVI

GEOGRAPHIC DISTRIBUTION OF FORMULA AND NON-FORMULA STATES

Geographic Region	Formula States	Non-Formula States
Southeast	10	2
Mideast	4	1
Plains	4	3
Southwest	2	2
Great Lakes	2	3
Rocky Mountain	1	4
New England		6
Other (Alaska and Hawaii)		2
Totals	25	25

operating budget becomes the base to which additional requests--justified by objective or subjective data--are added) was practiced by two formula states--New York and Wisconsin.[1]

4. Each budget formula consisted of several components or separate formulas. Each component was used for calculating the estimated funding requirements for one or more of the eight functional budget areas (instruction and departmental research, organized activities related to instruction, libraries, general administration and general expense, student services, organized research, extension and public service, and physical plant operation and maintenance) generally recognized by most colleges and universities. The number of states which treated each budget area as a formula item and which had separate formula components for each budget area is presented in Table XXVII. (The number of formula-calculated budget areas exceeded the number of formula components because 12 states had combined two or more budget areas.)

5. Formula components followed two separate approaches in calculating the funding requirements for budget areas. The all-inclusive approach (where the total amount for one or more budget areas is determined through one calculation) was used in 58 percent of the formula components, and the itemized approach (where the amount for one or more budget areas is the sum of several separate calculations, e.g., professional salaries, non-professional salaries, departmental expenses, etc.) was used in 42 percent of the formula components. Table XXVII presents the number of components in which each formula approach was used.

6. Many budget formulas differentiated among academic areas and student or instructional levels. Table XXVII presents the number of states

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[1]According to the literature received, the incremental approach appeared to be predominant in the non-formula states.

TABLE XXVII

SUMMARY OF BUDGET AREAS RECOGNIZED, FORMULA APPROACHES, AND AREAS OF SENSITIVITY OF FORMULAS IN TWENTY-FIVE STATES BY INDIVIDUAL BUDGET AREA

	Recognized by Formula		Formula Approach		Differentiation		
Functional Budget Areas	Included as Formula Components	Separate Formula Components	All Inclusive	Itemized	Academic Areas	Student or Instructional Levels	Among Institutions
Instruction and departmental research	25	25	4	21	14	23	16
Organized activities related to instruction	7	3	3			1	2
Libraries	23	22	11	10	6	10	5
General administration and general expense	17	17	15	2	1	2	2
Student services	19	8	8			1	2
Organized research	4	3	3				1
Extension and public service	6	4	3	1			2
Physical plant operation and maintenance	19	18	10	8		1	6

which made this differentiation by budget area. Sensitivity to these factors was most prevalent in the calculation of the estimated funding requirements for instruction and departmental research, where 14 states differentiated among academic areas and 23 states differentiated among student or instructional levels. Ten states (Alabama, Arkansas, Colorado, Florida, Louisiana, South Carolina, South Dakota, Tennessee, Texas, and Wisconsin) used budget formulas which differentiated among both factors.

7. A majority of the formula states used budget formulas which differentiated among institutions or types of institutions. Seven states (Florida, Minnesota, Ohio, Pennsylvania, Virginia, Washington, and West Virginia) specified (or allowed each institution to specify) different formula factors (e.g., rates, percentages, or ratios) for individual institutions. Twelve states (Colorado, Florida, Louisiana, Maryland, Mississippi, Missouri, Nevada, New Jersey, North Dakota, Oklahoma, South Carolina, and South Dakota) differentiated among types of institutions (e.g., colleges, specialized schools, regional universities, and comprehensive research universities) by specifying different formula factors. Table XXVII presents the number of states which differentiated among institutions by budget area.

8. Three basic computational methods were identified under which every formula calculation can be classified. They were: (1) the rate per base factor unit (RBFU) method; (2) the percentage of base factor (PBF) method; and (3) the base factor-position ratio with salary rates (BF-PR/SR) method. A summary of the number of states using each method by budget area is presented in Table XXVIII. The RFBU method was used in 37 percent of the calculations and was the primary method used in estimating funds for student services. The PBF method was used in 40 percent of the calcu-

TABLE XXVIII

SUMMARY OF FORMULA METHODS USED BY BUDGET AREA IN TWENTY-FIVE STATES

Budget Areas	Formula Methods		
	RBFU	PBF	BF-PR/SR
Instruction and departmental research	13	10	17
Organized activities related to instruction	1	2	
Libraries	12	16	8
General administration and general expense	8	11	1
Student services	6	2	1
Organized research		3	
Extension and public service	2	2	1
Physical plant operation and maintenance	11	11	4

Where: RBFU is the rate per base factor unit method.
PBF is the percentage of base factor method.
BF-PR/SR is the base factor-position ratio with salary rates method.

lations and was the primary method used in estimating funds for organized activities related to instruction, libraries, general administration and general expense, and organized research. The RBFU and PBF methods were used equally in calculating the estimated funds for plant operation and maintenance. The BF-PR/SR method was used in 23 percent of the calculations and was the primary method used in estimating funds for instruction and departmental research.

9. Twelve base factors were used in over 96 percent of the calculations. Their frequency of use by formula method is presented in Table XXIX. Projected FTE enrollment and student credit hours were the base factors used in 36 percent of the formula calculations (primarily in calculating the estimated funding requirements for instruction and departmental research, libraries, and student services) and were limited to the RBFU and BF-PR/SR methods. The total instructional budget was the base factor in 15 percent of the formula calculations (primarily in calculating the estimated funding requirements for organized activities related to instruction, general administration and general expense, and extension and public service) and was used only with the PBF method.

10. Twelve budget formulas met the general standards of acceptance by satisfying the minimum requirements of at least six of the eight performance criteria.[2] The Colorado, South Carolina, South Dakota, Tennessee, and Texas formulas met seven criteria, while the formulas used by Arkansas, Georgia, Maryland, Nevada, Ohio, Pennsylvania, and West Virginia each met six criteria. None met all eight standards.

11. Eight states (Connecticut, Illinois, Indiana, Kentucky, Massachusetts, Michigan, New Mexico, and Oregon) had abandoned the practice

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[2]A budget formula had to meet the three "most important" criteria and at least three of the five criteria judged to be "of some importance."

TABLE XXIX

SUMMARY OF BASE FACTORS USED BY FORMULA METHOD
IN TWENTY-FIVE STATES

Base Factors	Formula Methods			Total
	RBFU	PBF	BF-PR/SR	
FTE enrollment	17		23	40
Total I&DR budget		23		23
Student credit hours	13		4	17
Faculty FTE positions	6		9	15
Collection deficiencies	6	8		14
Academic salaries		14		14
Building space (square feet)	9		4	13
Other FTE positions	2		3	5
Total operating budget		3		3
Building replacement cost		3		3
Base year budget		3		3
Campus acreage	1		1	2
Others (5)	2	3		5

Where: RBFU is the rate per base factor unit method.
PBF is the percentage of base factor method.
BF-PR/SR is the base factor-position ratio with salary rates method.

of formula funding. Connecticut, Massachusetts, and Oregon have adopted program budgeting on an institution-by-institution basis.

12. Three formula states (Maryland, New Jersey, and Ohio) were using program/formula budgeting systems which involved the development of expenditure models that were (a) based on historical expenditure records, (b) program-oriented, and (c) applied on a formula basis.

III. CONCLUSIONS

The conclusions which follow were based on the review of related literature presented in Chapter II and the results presented in Chapters III and IV of the original study.

1. Formula funding of operating expenses for state-supported colleges and universities has increased considerably since its inception in 1951, as evinced by the use of budget formulas in 25 states in 1973. The geographical distribution of formula and non-formula states indicated that formula funding was most prevalent in the Southeast (where 10 out of 12 states used budget formulas), the Mideast (where four out of five states used budget formulas), and the Great Plains region (where four out of seven states used budget formulas). The states in the Southwest (four) and Far West (four) were evenly divided on formula and non-formula usage, while only a minority of the Great Lakes (two out of five) and Rocky Mountain (one out of five) states used budget formulas. The New England states (six), as well as those outside the continental U.S. (two), did not use budget formulas.

Twelve of the 14 SREB (Southern Regional Education Board) member states used budget formulas. Only Kentucky and North Carolina (which were first and second for appropriations per FTE student in 1971-72 in

the SREB region)[3] did not have budget formulas. These results suggest that budget formulas are more apt to be used and accepted in those states which spend relatively less on higher education, the reason being that formula funding at least assures institutions of higher education of a minimum foundation of state support on an equalized basis among colleges, regional universities, and comprehensive universities.

2. Budget formulas have been used predominantly in calculating the estimated funding requirements for those budget areas in which data related to expenditures were most easily quantifiable (e.g., the budget areas of instruction and departmental research, libraries, general administration and general expense, and student services were based directly or indirectly on projected FTE enrollments; and physical plant operation and maintenance was based on square feet of building space, building replacement cost, and campus acreage).

3. The incremental technique to budgeting does not lend itself to formula funding because it removes the base budget (last year's operating expenses) from objective determination or justification. Zero-base budgeting, on the other hand, goes well with formula funding in that the entire operating budget is developed anew each year on the basis of the objective data.

4. The all-inclusive approach for estimating funding requirements for each budget area is less detailed and may be more easily understood by legislators, educators, and the general public. However, its use restricts the number of base factors (which serve as indicators for

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[3] Fact Book on Higher Education in the South (Atlanta: Southern Regional Education Board, 1972, pp. 4-17.

estimating resource requirements) and may result in a budget request that bears little resemblance to actual needs (e.g., to base total library funding requirements only on projected FTE enrollments fails to take into consideration existing library collection deficiencies resulting from inadequate funding in the past). Conversely, the itemized approach may result in a budget formula which is quite complicated (and may not be widely understood), but it does add greater refinement and accuracy to a formula by permitting a broader base for resource requirement predictions.

5. The comparative analysis of formula components used in each state in estimating funding requirements for instruction and departmental research (which constitutes approximately 60 to 70 percent of most operating budgets) revealed two philosophies toward the financing of higher education. Eight states which used formulas on a statewide basis (Alabama, Arkansas, Florida, Georgia, Nevada, Tennessee, Texas, and Virginia) made no distinction among institutions or types of institutions when allocating funds for instructional programs. Instead, they differentiated among instructional levels and/or academic areas. This reflected an "equalization" policy in funding higher education which has the potential for a "leveling" effect upon the quality of instruction, because the leading colleges and universities (which most often have higher educational costs due to higher salary scales that are necessary to attract and hold distinguished professors) will be underfunded. The chances for attaining mediocrity are enhanced further if the state deducts the estimated unrestricted revenue (which includes income from student tuition and fees, federal and local appropriations, sales and services of educational departments, organized educational activities, recovery of indirect costs,

separately budgeted research, interest from invested unrestricted funds, rents, and royalties) of each institution from its formula-calculated budget request in arriving at the state appropriation. This restricts the capstone institutions further by limiting their operating budgets to a formula-prescribed amount that may be supplemented only by their endowment income and current restricted contributions.

In contrast, the remaining 13 states which applied formulas on a statewide basis (Colorado, Louisiana, Maryland, Mississippi, Missouri, New Jersey, North Dakota, Ohio, Pennsylvania, South Carolina, South Dakota, Washington, and West Virginia) differentiated among institutions or types of institutions as well as instructional levels and/or academic areas. This policy recognized the diversity of instructional costs and institutional differences, and reflected the commitment of many states to establish and/or maintain one or more outstanding institutions of higher learning.[4]

6. The vast differneces which existed among individual institutions and among individual state systems of higher education precluded the development of a "model formula." Although the budget formulas in 12 states were judged to be "acceptable" on the basis of meeting the minimum requirements of at least six (out of the eight) performance criteria, none could be designated as a model for national use.[5] Each formula was designed for the system of higher education to which it applied, and each formula had shortcomings that might be more pronounced if applied in another state.

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[4]The other formula states were evenly divided: the Oklahoma and Wisconsin formulas differentiated among institutions, while the Minnesota and New York formulas did not.

[5]The criteria were applied to each formula on an aggregate basis; therefore, no attempt was made to rate each formula component-by-component. In addition, the criteria were not designed to identify which formula or formula component best met its requirements.

IV. RECOMMENDATIONS

The recommendations growing out of the results of this study consist of guidelines for the development, utilization; and evaluation of budget formulas and suggestions for further studies.

Budget Formula Guidelines

The following guidelines are offered to assist those states contemplating formula funding or wishing to revise or modify existing formulas.

1. The decision to develop and utilize budget formulas should be made only after all alternatives have been fully identified and evaluated. Each state must decide, based on its own situation, whether or not the advantages of formula funding outweigh the disadvantages. On the positive side of the ledger, the advantages were perceived to be:

   a. Budget formulas can be developed which estimate the funding requirements for most of the functional budget areas of college and university operation based on objective (quantitative) data.

   b. Budget formulas have the potential for reducing the bickering, and open competition among institutions for state funds which may occur in the absence of any other rational, objective means for allocating funds.

   c. Budget formulas have the potential for assuring each institution of an annual operating base appropriation--assuming that the legislature accepts the formula and that the base factors (e.g., FTE enrollments) do not decrease.

   d. Budget formulas provide state officials with a reasonably simple and understandable basis for deciding upon and presenting the financial requirements of higher education.

   e. Budget formulas represent a compromise between state control over line-item budgeting and institutional fiscal autonomy.

On the negative side, the disadvantages of formula funding were perceived to be:

   a. Budget formulas do not recognize quality. This limitation will exist until the means for quantifying and measuring quality of instruction, research, and public service is developed.

b. A budget formula is limited in its ability to estimate adequately the funding requirements for a given budget area by how well the formula (fixed) factors represent reality and the extent to which the base (variable) factors have a positive correlation to historical expenditures.

c. Budget formulas, if used on an equalization basis, have a great potential for a "leveling" effect upon the quality of education. Whereas the educational programs in low-quality instituions may be improved through the increased funding realized when similar programs (e.g., the same instructional levels within the same academic areas) are funded at rates based on statewide average historical costs, it may be at the expense of the high-quality programs at the leading colleges and universities.

d. Budget formulas have the potential for restricting the operating budgets of institutions by requiring the deduction of all unrestricted revenue in arriving at the state appropriation, by precluding the distribution of surplus state revenue to higher education, and by using a narrow base which does not adequately predict resource requirements.

e. Budget formulas may perpetuate inadequate operating appropriations if the base or formula factors are selected on the basis of their existence at a point in time.

f. Budget formulas, through their reliance upon base and formula factors, historical costs, and arbritrary assumptions, are an enticement for institutions to increase enrollments in specific categories, or otherwise manipulate data in order to maximize their incomes.

2. The development of a budget formula should be performed by a task force consisting of the financial representatives from the state budget office, the higher education coordinating or governing agency, and from every institution to be affected. The task force should be given ample time and resources for conducting an intensive study of various funding approaches and formulas being used in other states. The task force should continue to exist as long as formula funding is practiced in order to perform periodic studies concerning the validity of the formula and to make recommendations for its revision, modification, or termination.

3. Budget formulas should be utilized only for calculating the funding requirements of those budget areas for which exist base factors with a high correlation to their historical expenditures. The base factors recommended for consideration in each budget area are:

Budget Areas	Base Factors
Instruction and departmental research	Projected FTE enrollments or credit hours
Organized activities related to instruction	Projected FTE enrollments or instructional budget
Libraries	Projected FTE enrollments or instructional budget and collection deficiencies
General administration and general expense	Projected FTE enrollments and the total educational and general budget (excluding GA and GE)
Student services	Projected FTE enrollments or instructional budget
Organized research	Research cost-sharing
Extension and public service	Continuing education units and instructional budget
Physical plant operation and maintenance	Square feet of building space, building replacement cost, or campus acreage

In calculating the budget or allocation for instruction and departmental research, the formula should recognize the varying costs of instruction by differentiating among each level of instruction within each academic area at each institution. One way to recognize varying costs would be to project student credit hours by level of instruction within each academic area. The projected credit hours should then be weighted (using a set of indices developed for each level within each area which reflects the statewide average cost differentials among levels and areas) and totaled by level of instruction. Credit hour-faculty ratios

(developed for each institution, types of institutions, or for all institutions) specified for each level of instruction could be applied to the total weighted projected credit hours to determine faculty FTE positions. Total faculty FTE positions would then be multiplied by salary rates[5] (specified for each institution or for each type of institution) to calculate the estimated funding for faculty compensation. Academic administration and supporting FTE positions could be based on the number of FTE faculty using faculty-position ratios. Departmental operating expenses could be calculated as a percentage of the total instructional salaries budgeted or by multiplying the number of FTE faculty by a specified rate.

The above method is recommended because the practice of applying statewide average rates per credit hour at each level of instruction within each academic area has three serious drawbacks: (1) it imperils the quality of undergraduate education over a period of time; (2) it increases the cost differentiation between graduate and undergraduate education; and (3) it promotes the proliferation of graduate programs. For example, when every institution is funded at statewide average rates per credit hour, the institutions with high cost programs (generally the comprehensive universities) will be underfunded each year. If these institutions cannot make up the difference between the level of state support and the actual costs of instruction through non-state sources (i.e., philanthropy, federal grants, etc.), then they must reduce costs. Such reductions are usually made in the undergraduate program--particularly in lower division--where larger sections can be taught by teaching

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[5] The salary rates should be competitive with the rates at similar institutions.

assistants without too great a risk of losing accreditation. The savings realized permits these institutions to maintain their graduate and research programs at the current levels of support and thus preserve their scholarly reputations. However, these actions are reflected each time a cost study is performed to update the formula rates. The result is a vicious cycle that not only increases the cost differentiation between graduate and undergraduate credit hours at the high-cost institutions, but also serves to depress the statewide average costs of undergraduate education, at which all other institutions are also funded. The senior colleges and regional universities (whose raison d'être is primarily quality undergraduate education) will, in time, experience underfunding for their undergraduate programs (particularly lower division). Finding themselves in a situation similar to high-cost institutions, they must either reduce costs in their undergraduate programs or mimic the graduate institutions an initiate or expand their graduate programs (for which rates may be three, four, or five times higher). The result is likely to be a proliferation of graduate programs of questionable need and quality.

4. Budget formulas should not be used for the "equalization" of institutions, unless mediocrity of educational programs is the desired goal. Instead, formula funding should serve as a minimum foundation for higher education, and the actual state appropriation for each institution should not be reduced by unrestricted revenue from the sale of educational services, federal or local governments, or from any source except student tuition and fees. This would provide for the improvement of low-quality programs without jeopardizing the leading "centers of excellence" in academe or without destroying their initiative for self-improvement through increased non-state revenue.

5. There should always be the provision for an institution to override the formula-calculated amount in its operating budget request with an additional request supported by both objective and subjective data.

The Need for Further Study

Further studies need to be performed to illuminate the following areas:

1. All base factors which have a high correlation to the financial resource requirements of each budget area need to be identified.

2. The work of John Dale Russell, pertaining to the percentage relationship of each budget area to the total operating budget, needs to be updated for colleges, regional universities, and comprehensive research-oriented universities.

3. Alternatives to formula funding need to be identified, tested, and evaluated. They should be compared with existing budget formulas and rated using performance criteria similar to those used in this study.

4. Answers to certain fundamental questions, such as the following, need to be found:

a. What effects will the leveling off of enrollments have on the financing of higher education which is based on formulas that are driven primarily by projected FTE enrollment?

b. How can uniform budget formulas differentiate between the financial requirements of young institutions (with a young and relatively untenured faculty) and the financial requirements of old established institutions (which tend to have an older and higher percentage of tenured faculty)?

c. How can quality education be quantified and measured?

5. The reasons why states adopt or abandon budget formulas need to be identified. This information would be useful in developing alternatives to formula funding.

6. A study similar to this one should be performed regularly (at least every five years) to ascertain the current state-of-the-art in formula budgeting.

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APPENDIX A

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